STEREO INTEGRATED AMPLIFIER

A-85

SERVICE MANUAL
MICROPROCESSOR EDITION

KENWOOD

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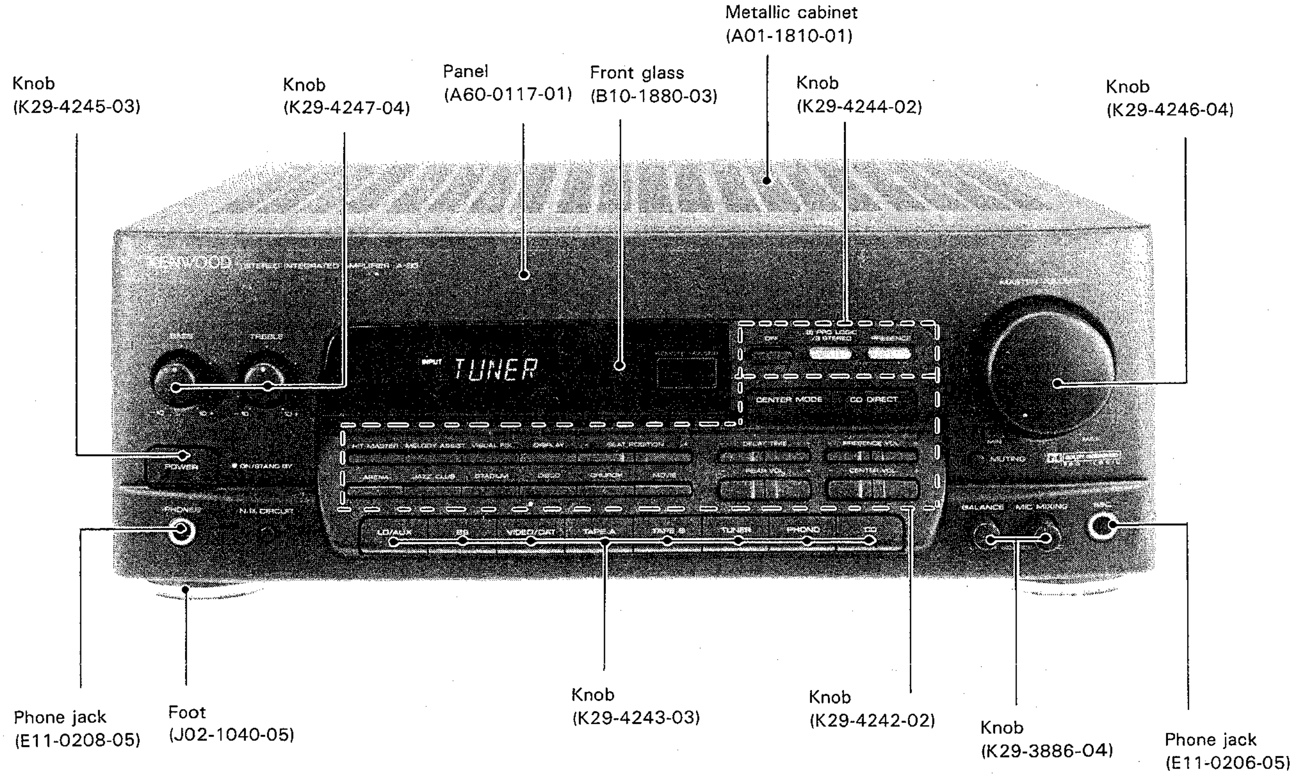
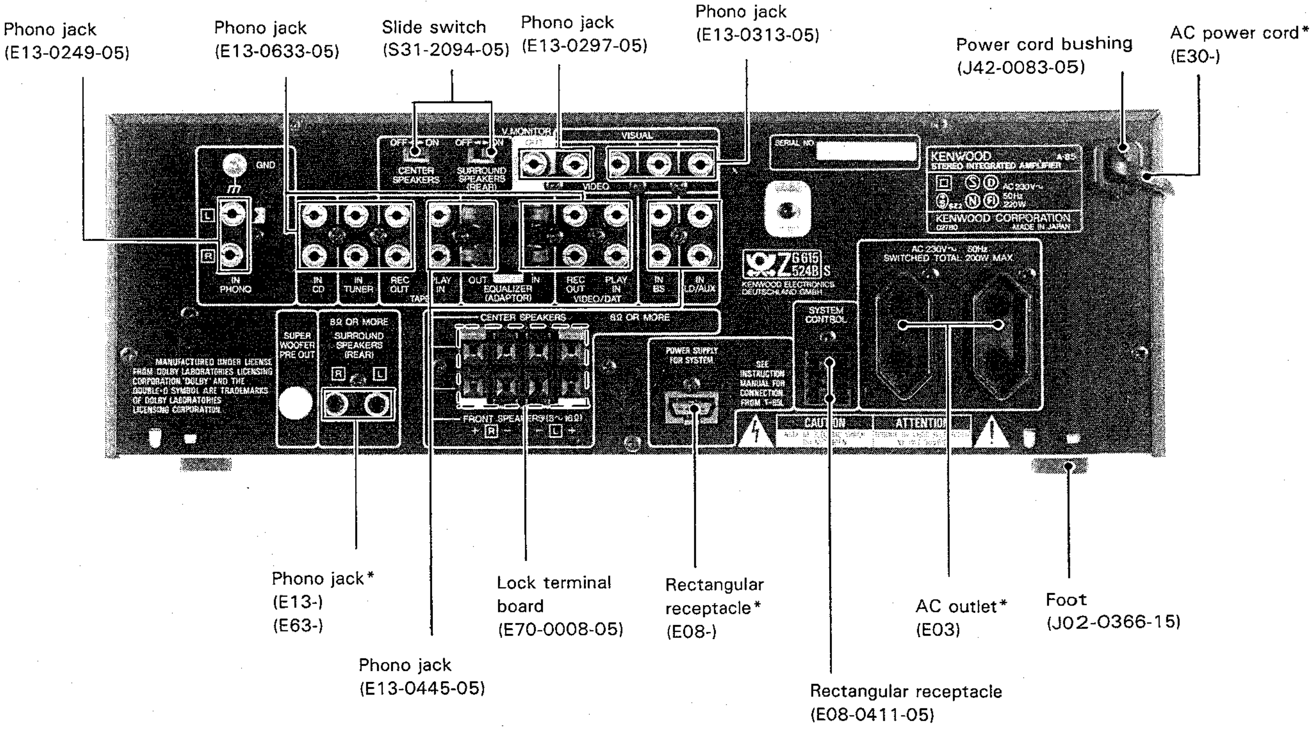
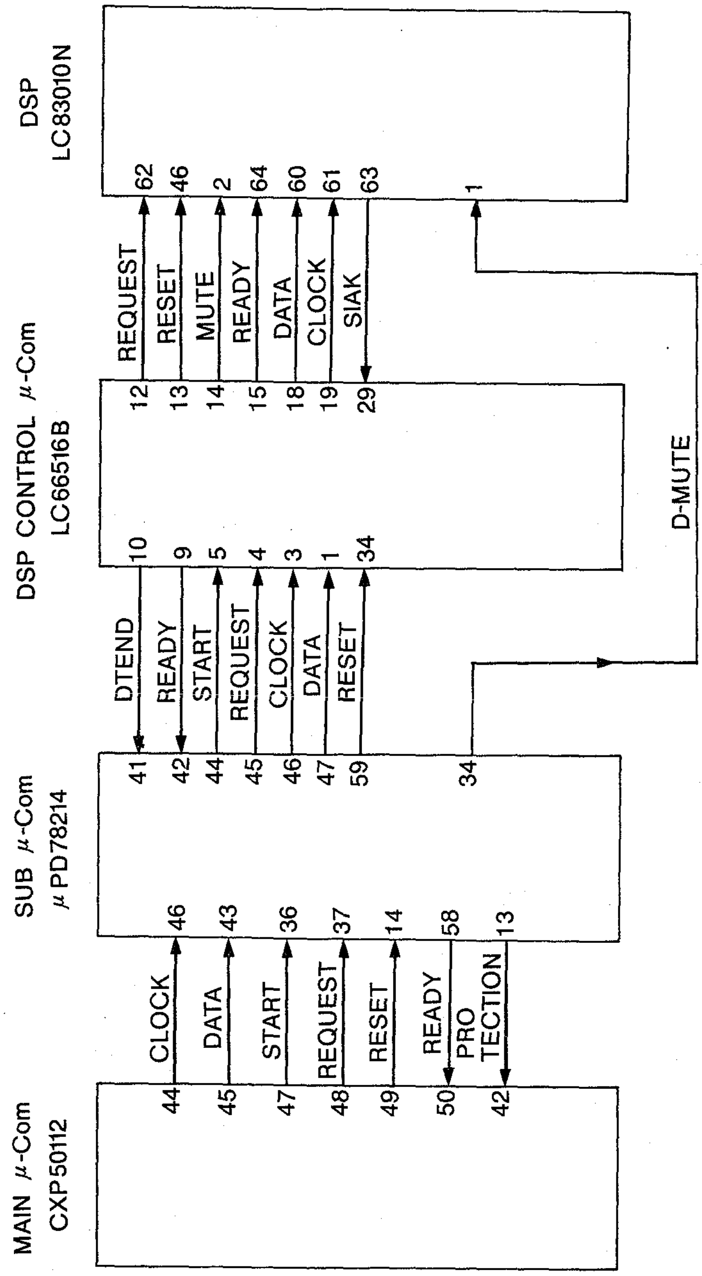
B51-4343-10 (S) 1941


Metallic cabinet
(A01-1810-01)
Knob
(K29-4245-03)
Knob
(K29-4247-04)
Panel
(A60-0117-01)
Front glass
(B10-1880-03)
Knob
(K29-4244-02)
Knob
(K29-4246-04)
TUNER
Phone jack
(E11-0208-05)
Foot
(J02-1040-05)
Knob
(K29-4243-03)
Knob
(K29-4242-02)
Knob
(K29-3886-04)
Phone jack
(E11-0206-05)


Phono jack
(E13-0249-05)
Phono jack
(E13-0633-05)
Slide switch
(S31-2094-05)
Phono jack
(E13-0297-05)
Phono jack
(E13-0313-05)
Power cord bushing
(J42-0083-05)
AC power cord*
(E30-)
Phono jack*
(E13-)
(E63-)
Phono jack
(E13-0445-05)
Lock terminal
board
(E70-0008-05)
Rectangular
receptacle*
(E08-)
AC outlet*
(E03)
Foot
(J02-0366-15)
Rectangular receptacle
(E08-0411-05)

CIRCUIT DESCRIPTION

Micro processor

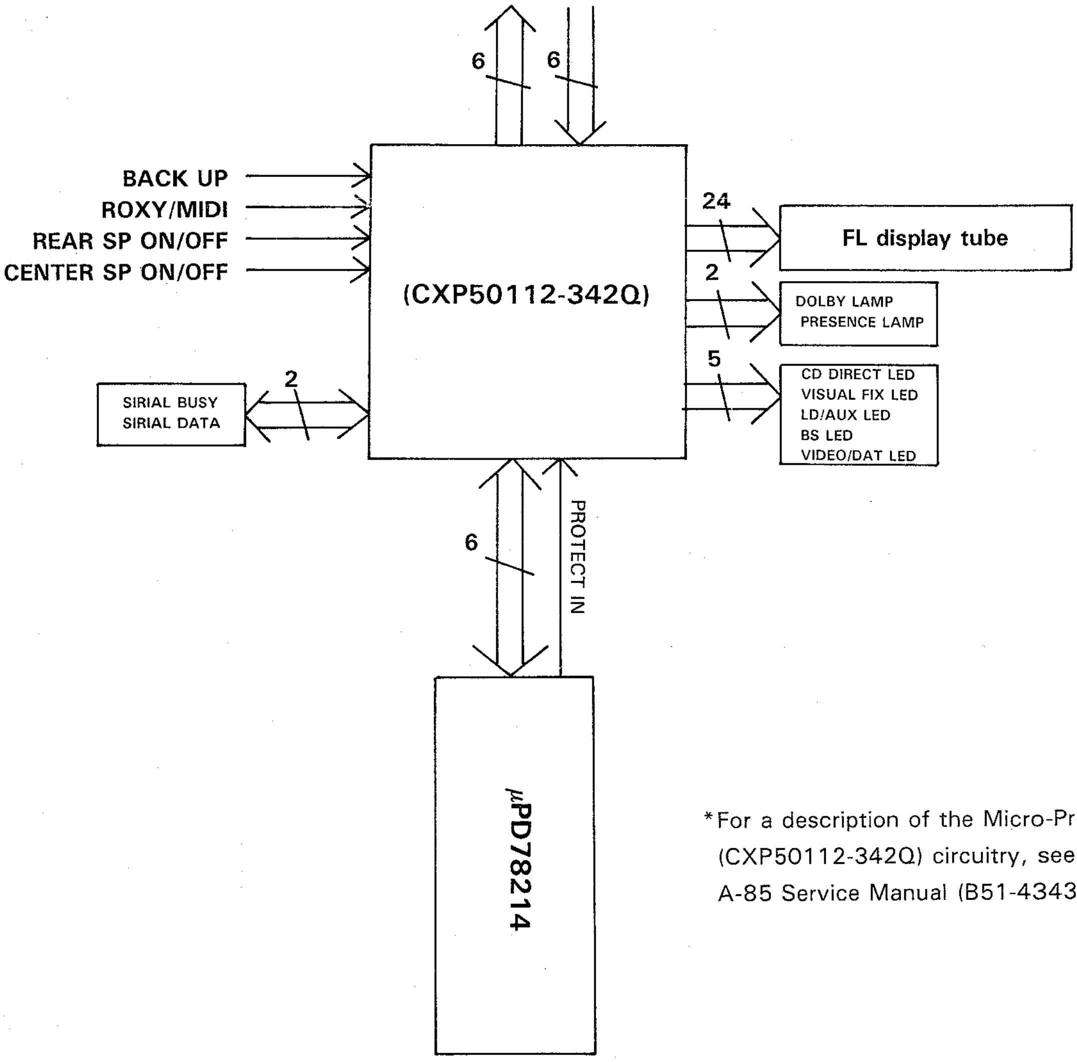

DSP
LC83010N
DSP CONTROL μ-Com
LC66516B
SUB μ-Com
μPD78214
MAIN μ-Com
CXP50112
REQUEST 12 62
RESET 13 46
MUTE 14 2
READY 15 64
DATA 18 60
CLOCK 19 61
SIAK 29 63
1
D-MUTE
DTEND 10 41
READY 9 42
START 5 44
REQUEST 4 45
CLOCK 3 46
DATA 1 47
RESET 34 59
34
CLOCK 46 44
DATA 43 45
START 36 47
REQUEST 37 48
RESET 14 49
READY 58 50
PRO TECTION 13 42

CIRCUIT DESCRIPTION

Microprocessor

Block diagrm of microcomputer's peripheral equipment

	RETURN 0	RETURN 1	RETURN 2	RETURN 3	RETURN 4	RETURN 5
SCAN 5	OFF	PRESENCE	3STEREO	CD DIRECT	MUTE	CENTER MODE
SCAN 4	HIT MASTER	POWER	MELODY ASSIST	JAZZ CLUB	NB CIRCUIT	ARENA
SCAN 3	DISCO	LD/AUX	VISUAL FIX	STADIUM	BS	DISPLAY
SCAN 2	CHURCH	VIDEO DAT	TAPE A	MOVIE	SEAT-P FRONT	SEAT-P REAR
SCAN 1	DELAY DOWN	TAPE B	TUNER	REAR UP	DELAY UP	REAR DOWN
SCAN 0	PHONO	P-VOL. UP	CENTER UP	CD	P-VOL. DOWN	CENTER DOWN

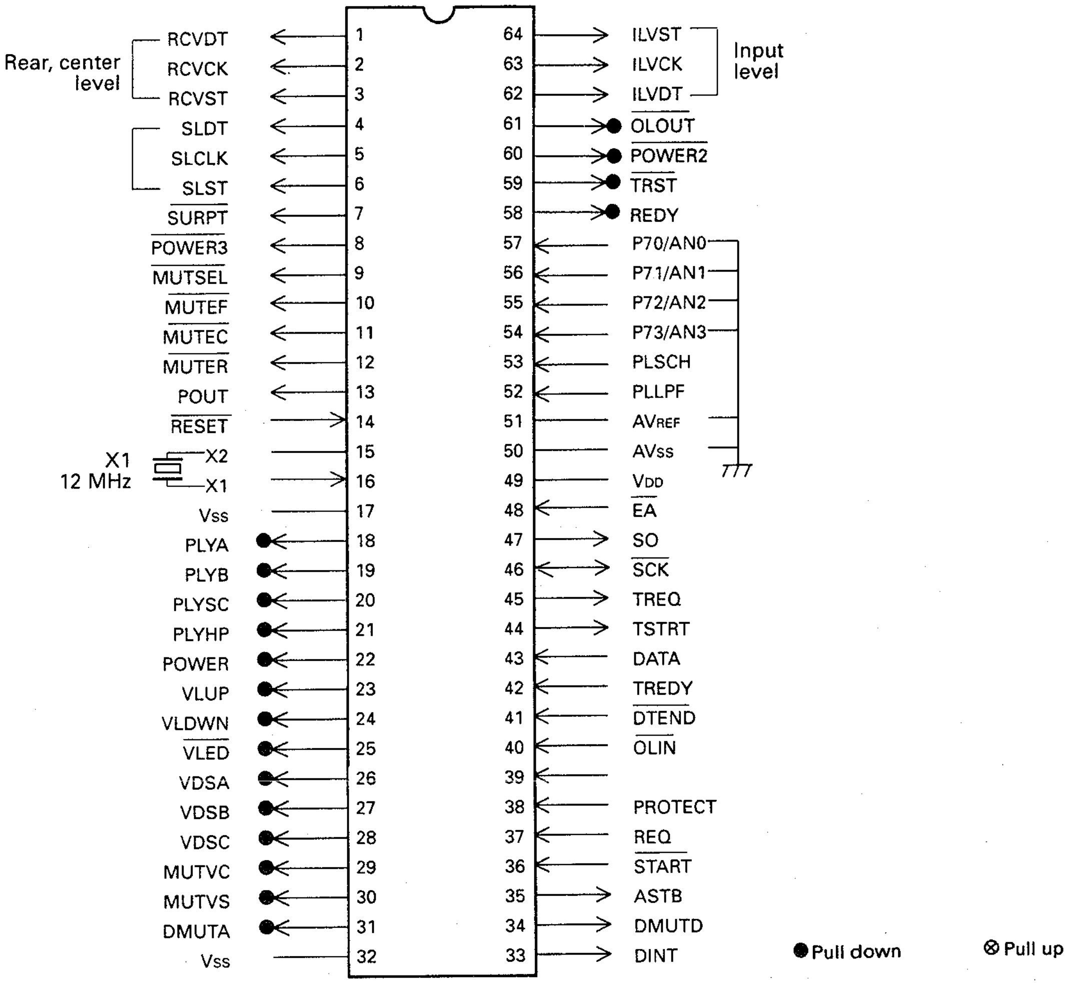

6
6
BACK UP
ROXY/MIDI
REAR SP ON/OFF
CENTER SP ON/OFF
(CXP50112-342Q)
24
FL display tube
2
DOLBY LAMP
PRESENCE LAMP
5
CD DIRECT LED
VISUAL FIX LED
LD/AUX LED
BS LED
VIDEO/DAT LED
2
SIRIAL BUSY
SIRIAL DATA
6
PROTECT IN
μPD78214

*For a description of the Micro-Processor (CXP50112-342Q) circuitry, see page 6 of the A-85 Service Manual (B51-4343-00).

CIRCUIT DESCRIPTION

System control microprocessor : µPD78214CW

Terminal connection diagram


Rear, center level
RCVDT 1
RCVCK 2
RCVST 3
SLDT 4
SLCLK 5
SLST 6
SURPT 7
POWER3 8
MUTSEL 9
MUTEF 10
MUTEC 11
MUTER 12
POUT 13
RESET 14
X1 12 MHz
X2 15
X1 16
Vss 17
PLYA 18
PLYB 19
PLYSC 20
PLYHP 21
POWER 22
VLUP 23
VLDWN 24
VLED 25
VDSA 26
VDSB 27
VDSC 28
MUTVC 29
MUTVS 30
DMUTA 31
Vss 32
64 ILVST
63 ILVCK
62 ILVDT
Input level
61 OLOUT
60 POWER2
59 TRST
58 REDY
57 P70/AN0
56 P71/AN1
55 P72/AN2
54 P73/AN3
53 PLSCH
52 PLLPF
51 AVREF
50 AVss
49 VDD
48 EA
47 SO
46 SCK
45 TREQ
44 TSTRT
43 DATA
42 TREDY
41 DTEND
40 OLIN
39
38 PROTECT
37 REQ
36 START
35 ASTB
34 DMUTD
33 DINT
● Pull down
⊗ Pull up

Pin function

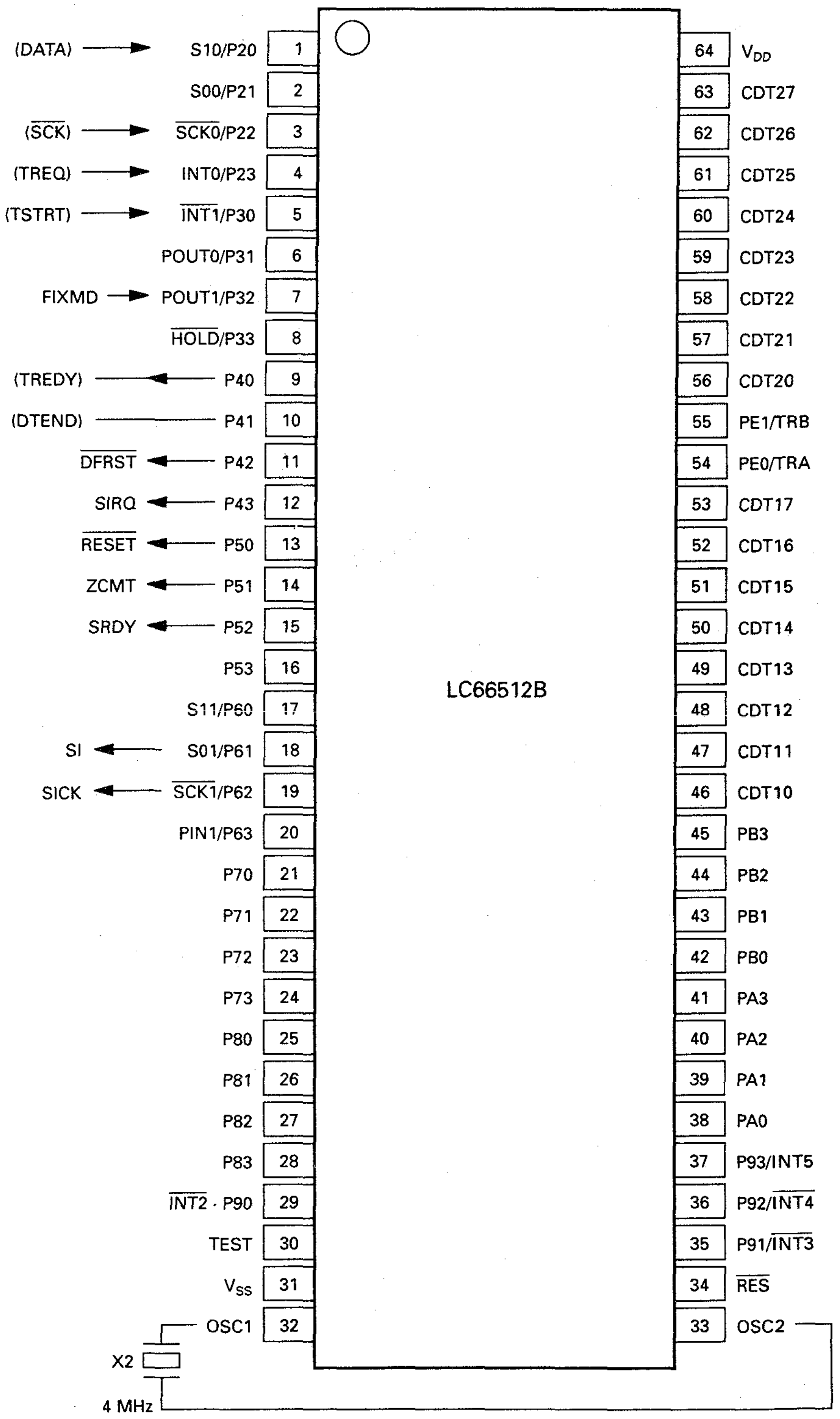
Pin No.	Pin name	I/O	Name	Description
1	P03	O	RCVDT	Rear,center electric volume
2	P04	O	RCVCK	TC9213P control pin CK signal
3	P05	O	RCVST	STB signal
4	P06	O	SLDT	Switch array IC DATA signal
5	P07	O	SLCLK	TC9162N, 9163N CK signal
6	P67	O	SLST	TC9164N control pin ST signal
7	P66	O	SURPT	Surround (DSP IC) oscillate control H: Stop L: Oscillate
8	P65	O	POWER3	Port used to synchronize with the timing of the power up of the D/A converter
9	P64	O	MUTSEL	Selector mute pin H: MUTE OFF L: MUTE ON
10	P63	O	MUTEF	Front signal mute pin H: MUTE OFF L: MUTE ON
11	P62	O	MUTEC	Center signal mute pin H: MUTE OFF L: MUTE ON
12	P61	O	MUTER	Rear signal mute pin H: MUTE OFF L: MUTE ON
13	P60	O	POUT	Pin that notifies the main µ-com of protection detection
14	RESET	I		Reset pin

Pin function

Pin No.	Pin name	I/O	Name	Description
15	X2			System clock oscillator connect pin
16	X1	I		
17	Vss	O		Gnd
18	P57	O	RLYA	Speaker A relay control pin L: Power OFF H: Power ON
19	P56	O	RLYB	Speaker B relay control pin L: Power OFF H: Power ON
20	P55	O	RLYSC	Speaker (SURROUND CENTER) relay control pin L: Power OFF H: Power ON
21	P54	O	RLYHP	Headphone relay control pin L: Power OFF H: Power ON
22	P53	O	POWER	Powersupply control pin L: POWER OFF H: POWER ON
23	P52	O	VLUP	Master volume UP control pin
24	P51	O	VLDWN	Master volume DOWN control pin
25	P50	O	$\overline{\text{VLED}}$	Master volume LED control pin L: LED ON H: LED OFF
26	P47	O	VDSA	Video selection control pin | V1 | V2 | V3 VDSA | 0 | 1 | 1 VDSB | 1 | 0 | 1 VDSC | 1 | 1 | 0 Monitor -OUT: COMPOSITE | V1 | V2 | V3 S-OUT | - | V2 | V3 V1 ~ V3: Input of VIDEO 1 ~ VIDEO 3
27	P46	O	VDSB	
28	P45	O	VDSC	
29	P44	O	MUTVC	Composie video mute control pin
30	P43	O	MUTVS	S ch video mute control pin MUTE is OFF only entered the VIDEO 3 mode
31	P42	O	DMUTA	DSP analog mute control pin SURROUND ON: MUTE OFF SURROUND OFF: MUTE ON When switched : MUTE ON
32	Vss			Gnd
33	P41	O	DINT	No used
34	P40	O	DMUTD	DSP digital mute control pin
35	ASTB			No used
36	P20/NMI	I	$\overline{\text{START}}$	START signal input pin for communicating to main µ-com
37	P21	I	REQ	REQ signal input pin for communicating to main µ-com
38	P22	I	PROTECT	Protection signal detection pin
39	P23			No used
40	P24	I	$\overline{\text{OLIN}}$	Over level signal detection pin
41	P25	I	$\overline{\text{DTEND}}$	DTEND signal input pin for communicating to DSP IC control µ-com
42	P26	I	TREDY	TREDY signal input pin for communicating to DSP IC control µ-com
43	P27/SI	I	DATA	DATA signal input SI port of communicating to mainl µ-com
44	P30	O	TSTRT	START signal output pin for communicating to DSP IC control µ-com
45	P31	O	TREQ	REQ signal output pin for communicating to DSP IC control µ-com
46	P32/SCK	I/O	$\overline{\text{SCK}}$	SCK I/O pin for communicating to main µ-com and DSP IC control µ-com
47	P33/SO	O	SO	SO signal output pin for communicating to DSP IC control µ-com
48	EA			No used
49	VDD			Power supply pin
50,51	AVss, AVREF			No used
52 ~57	P75 ~ P70	I		No used
58	P34	O	REDY	REDY signal output pin for communicating to main µ-com
59	P35	O	$\overline{\text{TRST}}$	DSP IC control µ-com reset pin
60	P36	O	$\overline{\text{POWER2}}$	Port used to synchronize with the timing of the power up of the D/A converter
61	P37	O	OLOUT	Over level output pin L: FL light H: FL not light
62	P00	O	ILVDT	Input level electric volume DATA signal
63	P01	O	ILVCK	CK signal
64	P02	O	ILVST	ST signal

CIRCUIT DESCRIPTION

DSP µ-Com: LC66516B

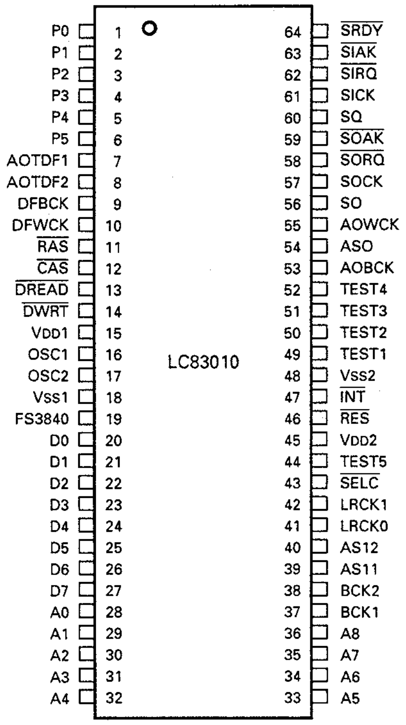

(DATA) → S10/P20 1
S00/P21 2
($\overline{SCK}$) → $\overline{SCK0}$/P22 3
(TREQ) → INT0/P23 4
(TSTRT) → $\overline{INT1}$/P30 5
POUT0/P31 6
FIXMD → POUT1/P32 7
$\overline{HOLD}$/P33 8
(TREDY) ← P40 9
(DTEND) — P41 10
$\overline{DFRST}$ ← P42 11
SIRQ ← P43 12
$\overline{RESET}$ ← P50 13
ZCMT ← P51 14
SRDY ← P52 15
P53 16
S11/P60 17
SI ← S01/P61 18
SICK ← $\overline{SCK1}$/P62 19
PIN1/P63 20
P70 21
P71 22
P72 23
P73 24
P80 25
P81 26
P82 27
P83 28
$\overline{INT2}$ · P90 29
TEST 30
V_{SS} 31
OSC1 32
X2
4 MHz
LC66512B
64 V_{DD}
63 CDT27
62 CDT26
61 CDT25
60 CDT24
59 CDT23
58 CDT22
57 CDT21
56 CDT20
55 PE1/TRB
54 PE0/TRA
53 CDT17
52 CDT16
51 CDT15
50 CDT14
49 CDT13
48 CDT12
47 CDT11
46 CDT10
45 PB3
44 PB2
43 PB1
42 PB0
41 PA3
40 PA2
39 PA1
38 PA0
37 P93/INT5
36 P92/$\overline{INT4}$
35 P91/$\overline{INT3}$
34 $\overline{RES}$
33 OSC2

Pin function

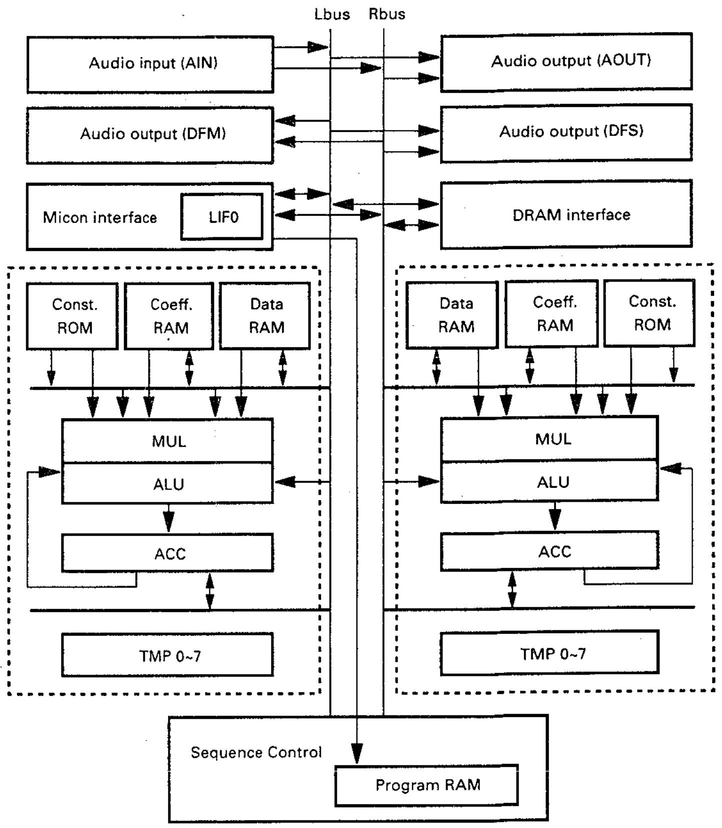
Pin No.	Pin name	I/O	Name	Description
1	SI0/P20	I	DATA	DATA signal input pin from system control µ-com
2	SO0			No used
3	$\overline{SCK}$/P22	I	$\overline{SCK}$	Clock signal input pin from system control µ-com
4	INT0/P23	I	TREQ	TREQ signal input pin from system control µ-com
5	INT1/P30	I	TSTRT	TSTRT signal input pin from system control µ-com
6	Pout0/P31	I		No used
7	Pout1/P32	I	FIXMD	Fixation terminal mode setting pin. Low: Normal mode High: Fixation terminal mode
8	$\overline{HOLD}$/P33	I	TSTRT	HOLD mode control input
9	P40	O	TREDY	TREDY signal output pin to system control µ-com
10	P41	O	DTEND	At mode change (command 0 ~ 2) and during clear the DRAM, transfer the data to DSP IC.
11	P42	O	$\overline{DFRST}$	Digital filter reset signal output pin (Normally High)
12	P43	O	SIRQ	DSP IC LC83010 SIRQ signal output pin
13	P50	O	$\overline{RES}$	DSP IC LC83010 Reset signal output pin (Normally High)
14	P51	O	ZCMT	Zero cross mute control signal output pin
15	P52	O	SRDY	DSP IC LC83010 SRDY signal output pin
16,17	P53, SU/P06			No used
18	SO1/P61	O	SI	DSP IC LC83010 SI signal output pin
19	$\overline{SCK1}$/P62	O	SICK	DSP IC LC83010 SICK signal output pin
20 ~ 28	PIN1/P63 P70 ~ P73 P80 ~ P83	O		No used
29	$\overline{INT2}$/P90			DSP IC LC83010 SIAK signal input pin
30	TEST			CPU test pin. Connected to Vss.
31	Vss			GND pin
32	OSC1	I		System clock oscillator pin
33	OSC2	O		System clock oscillator pin
34	$\overline{RES}$	I		System reset signal input pin
35 ~ 37	P91 ~93 $\overline{INT3}$ ~ $\overline{INT5}$			No used
38 ~ 45	PA0 ~ PA3 PB0 ~ PB3	I I		No used
46 ~ 53	PC0	I	CDT10 ~ 17	Correspond to bit 0 ~ 7 of data address 1 of command data in the fixed pin mode.
54	PE0/TRA	I		Correspond to 2 low-order bits of command data in the fixed pin mode. The fixed pin mode can be set to 00, 01,02 or 03.
55	PE1/TRB	I		
56 ~ 63	P35	I	CDT20 ~ 27	Corresponds to bit 0 ~ 7 of data address 2 of command data in the fixed pin mode.
64	VDD			Power supply

DSP IC : LC83010

Pin connection


LC83010
P0 1
P1 2
P2 3
P3 4
P4 5
P5 6
AOTDF1 7
AOTDF2 8
DFBCK 9
DFWCK 10
$\overline{RAS}$ 11
$\overline{CAS}$ 12
$\overline{DREAD}$ 13
$\overline{DWRT}$ 14
VDD1 15
OSC1 16
OSC2 17
Vss1 18
FS3840 19
D0 20
D1 21
D2 22
D3 23
D4 24
D5 25
D6 26
D7 27
A0 28
A1 29
A2 30
A3 31
A4 32
33 A5
34 A6
35 A7
36 A8
37 BCK1
38 BCK2
39 AS11
40 AS12
41 LRCK0
42 LRCK1
43 $\overline{SELC}$
44 TEST5
45 VDD2
46 $\overline{RES}$
47 $\overline{INT}$
48 Vss2
49 TEST1
50 TEST2
51 TEST3
52 TEST4
53 AOBCK
54 ASO
55 AOWCK
56 SO
57 SOCK
58 $\overline{SORQ}$
59 $\overline{SOAK}$
60 SQ
61 SICK
62 $\overline{SIRQ}$
63 $\overline{SIAK}$
64 $\overline{SRDY}$

Block diagram


Lbus
Rbus
Audio input (AIN)
Audio output (AOUT)
Audio output (DFM)
Audio output (DFS)
Micon interface
LIFO
DRAM interface
Const. ROM
Coeff. RAM
Data RAM
MUL
ALU
ACC
TMP 0~7
Data RAM
Coeff. RAM
Const. ROM
MUL
ALU
ACC
TMP 0~7
Sequence Control
Program RAM

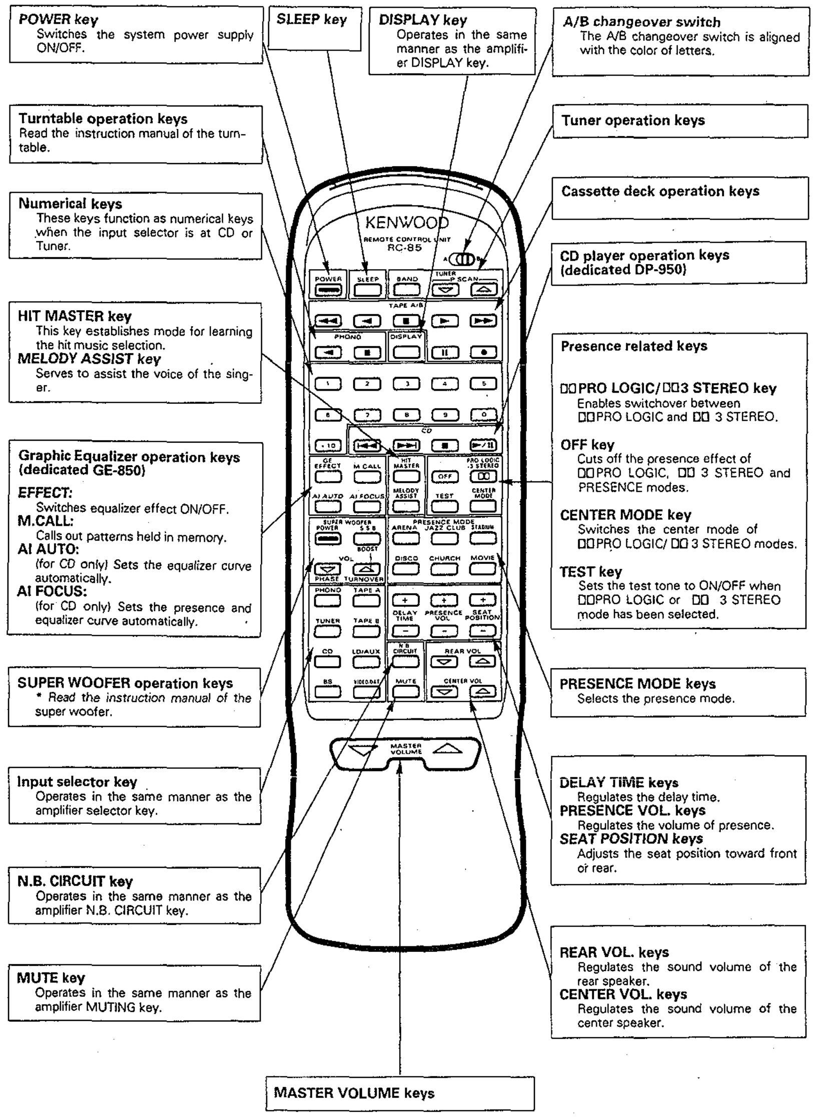
CIRCUIT DESCRIPTION

Pin function

Pin No.	Pin name	I/O	Description	
1	P0	I	Digital mute - High: mute; Low: unmute during DSP program	
2	P1	I	Soft muting - High during DSP program: Soft mute with time constant of 1 ms; Low: Unmute	
3	P2	O	Overflow detection *If the input data from the A/D converter becomes the maximum positive* or negative value a low signal is output, held for 100 ms, and goes high.	
4	P3	I	Phase shifter control The phase shifter is turned on and off during 3-channel sound field program. Low: on; High; off. Always used with "LOW".	
5	P4	I	Direct sound add control Control whether direct sound is added in the DSP during sound field program. High: Add; Low: Do not add. Always used with "LOW".	
6	P5	I/O	General input/output port No used (open)	
7	AOTDF2	O	Audio data output 1 C ch and S ch data is output during Dolby pro logic and 4-ch sound field. If 3 stereo and 3-CH are set, only C ch data is output.	
8	AOTDF2	O	Audio data output 2 Decoded L/R data is output for Dolby. The L/R sound field signal is output for sound field.	
9	DFBCK	O	Bit clock for AOTDF 1 and 2 48 fs bit clock is output.	
10	DFWCK	O	Word clock for AOTDF 1 and 2 No used	
11	$\overline{\text{RAS}}$	O	For row address strobe DRAM access control	
12	$\overline{\text{CAS}}$	O	For column address strobe DRAM access control	
13	$\overline{\text{DREAD}}$	O	DRAM *read control signal*	
14	$\overline{\text{DWRT}}$	O	DRAM write control signal	
15, 45	VDD1, 2	I	Power supply pin	
18, 48	VSS1, 2		GND pin	
16	OSC1	I	*Crystal oscillator pin*	
17	OSC2	O	Crystal oscillator pin	
19	FS3840	O	*384fs output pin*	
20 ~ 27	D0 ~ D7	I/O	DRAM data I/O pin	
28 ~ 36	A0 ~ A8	O	DRAM *address output pin (A8 is no used)*	
37	BCK1	I	No used	
38	BCK2	O	Bit clock output pin 32fs bit clock output for A/D	
39	ASI1	I	No used	
40	ASI2	I	Audio data input pin 2 Data input from A/D	
41	LRCKO	O	L/R clock output pin	
42	LRCKI	I	No used	
43	$\overline{\text{SELC}}$	I	Self oscillation and external clock input switching	
44	TEST 5	O	Test pin Used by open	
46	$\overline{\text{RES}}$	I	Reset pin	
47	$\overline{\text{INT}}$	I	No used	
49 ~ 52	TEST 1 ~ 4	I	Test pin Connected to GND	
53	AOBCK	O	No used	
54	ASO	O	Audio data output (overflow detection) Used by the the KR-V9030 to detect overflow for Dolby.	
55 ~ 59	A0WCK etc.		No used	
60	SI	I	Serial data input from μ-com	DSP ↔ μ-com interface
61	SICK	I	Serial clock input of SI input	
62	$\overline{\text{SIRQ}}$	I	SI request signal input	
63	SIAK	O	Output signal to indicate that the SI serial communication is executing	
64	$\overline{\text{SRDY}}$	I	Input signal to indicate that the mail box communication is finished	

REMOTE CONTROLLER

The illustration for the Remote Controller depicted in the A-85 Service Manual (B51-4343-00) is NOT correct. Use the illustration shown below in it's place. The part numbers however, are the same.



POWER key
Switches the system power supply ON/OFF.

SLEEP key

DISPLAY key
Operates in the same manner as the amplifier DISPLAY key.

A/B changeover switch
The A/B changeover switch is aligned with the color of letters.

Turntable operation keys
Read the instruction manual of the turntable.

Tuner operation keys

Numerical keys
These keys function as numerical keys when the input selector is at CD or Tuner.

Cassette deck operation keys

CD player operation keys (dedicated DP-950)

HIT MASTER key
This key establishes mode for learning the hit music selection.
MELODY ASSIST key
Serves to assist the voice of the singer.

Presence related keys

DDPRO LOGIC/DD3 STEREO key
Enables switchover between DDPRO LOGIC and DD 3 STEREO.

OFF key
Cuts off the presence effect of DDPRO LOGIC, DD 3 STEREO and PRESENCE modes.

CENTER MODE key
Switches the center mode of DDPRO LOGIC/ DD 3 STEREO modes.

TEST key
Sets the test tone to ON/OFF when DDPRO LOGIC or DD 3 STEREO mode has been selected.

Graphic Equalizer operation keys (dedicated GE-850)
EFFECT:
Switches equalizer effect ON/OFF.
M.CALL:
Calls out patterns held in memory.
AI AUTO:
(for CD only) Sets the equalizer curve automatically.
AI FOCUS:
(for CD only) Sets the presence and equalizer curve automatically.

SUPER WOOFER operation keys
* *Read the instruction manual of the* super woofer.

PRESENCE MODE keys
Selects the presence mode.

Input selector key
Operates in the same manner as the amplifier selector key.

DELAY TIME keys
Regulates the delay time.
PRESENCE VOL. keys
Regulates the volume of presence.
SEAT POSITION keys
Adjusts the seat position toward front or rear.

N.B. CIRCUIT key
Operates in the same manner as the amplifier N.B. CIRCUIT key.

MUTE key
Operates in the same manner as the amplifier MUTING key.

REAR VOL. keys
Regulates the sound volume of the rear speaker.
CENTER VOL. keys
Regulates the sound volume of the center speaker.

MASTER VOLUME keys

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STEREO DOUBLE AUTO REVERSE CASSETTE DECK

X-45/85
SERVICE MANUAL

KENWOOD

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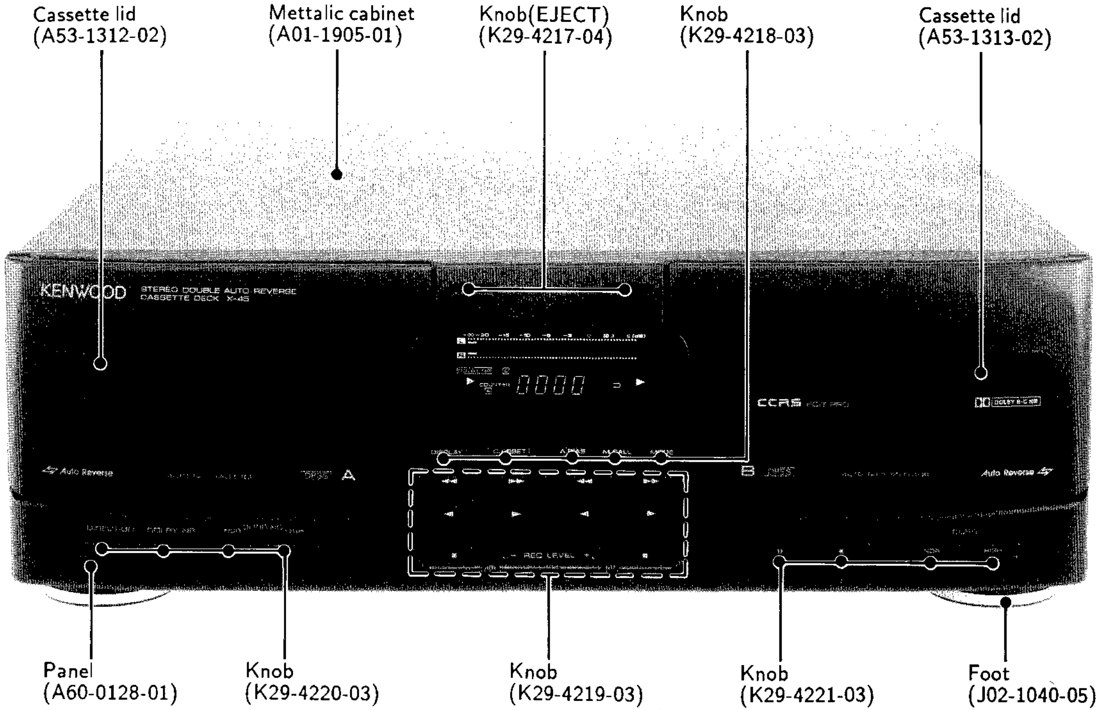
Cassette lid
(A53-1312-02)
Mettalic cabinet
(A01-1905-01)
Knob(EJECT)
(K29-4217-04)
Knob
(K29-4218-03)
Cassette lid
(A53-1313-02)
KENWOOD
Panel
(A60-0128-01)
Knob
(K29-4220-03)
Knob
(K29-4219-03)
Knob
(K29-4221-03)
Foot
(J02-1040-05)

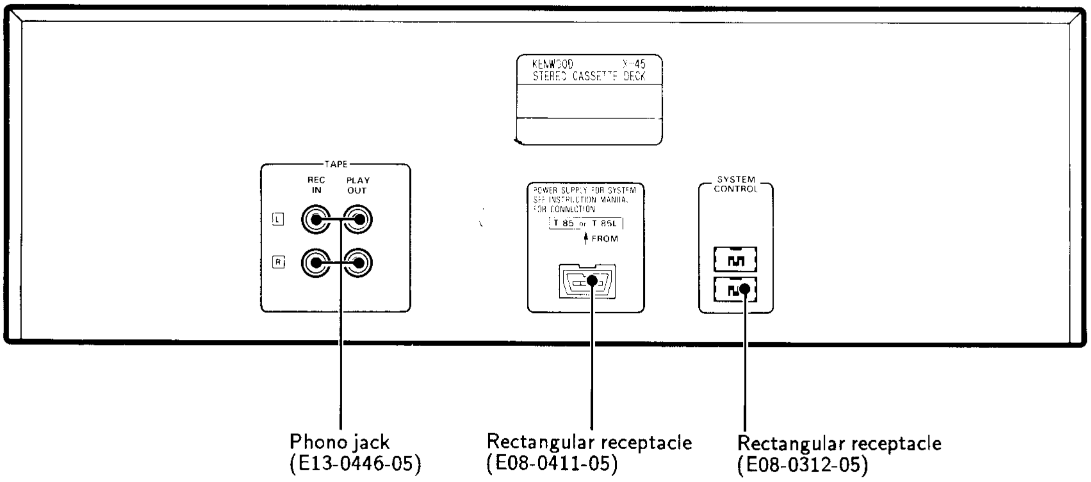
KENWOOD X-45
STEREO CASSETTE DECK
TAPE
REC IN
PLAY OUT
L
R
POWER SUPPLY FOR SYSTEM
SEE INSTRUCTION MANUAL
FOR CONNECTION
T 85 or T 85L
FROM
SYSTEM CONTROL
Phono jack
(E13-0446-05)
Rectangular receptacle
(E08-0411-05)
Rectangular receptacle
(E08-0312-05)

PHOTO is X-45

PRECAUTIONS FOR REPAIR

X-45/85 Cassette Deck is not provided with a power supply. For repairing the cassette deck, use the amplifier's power supply section or another provisional power supply. (RM-90PS)

CONNECTIONS

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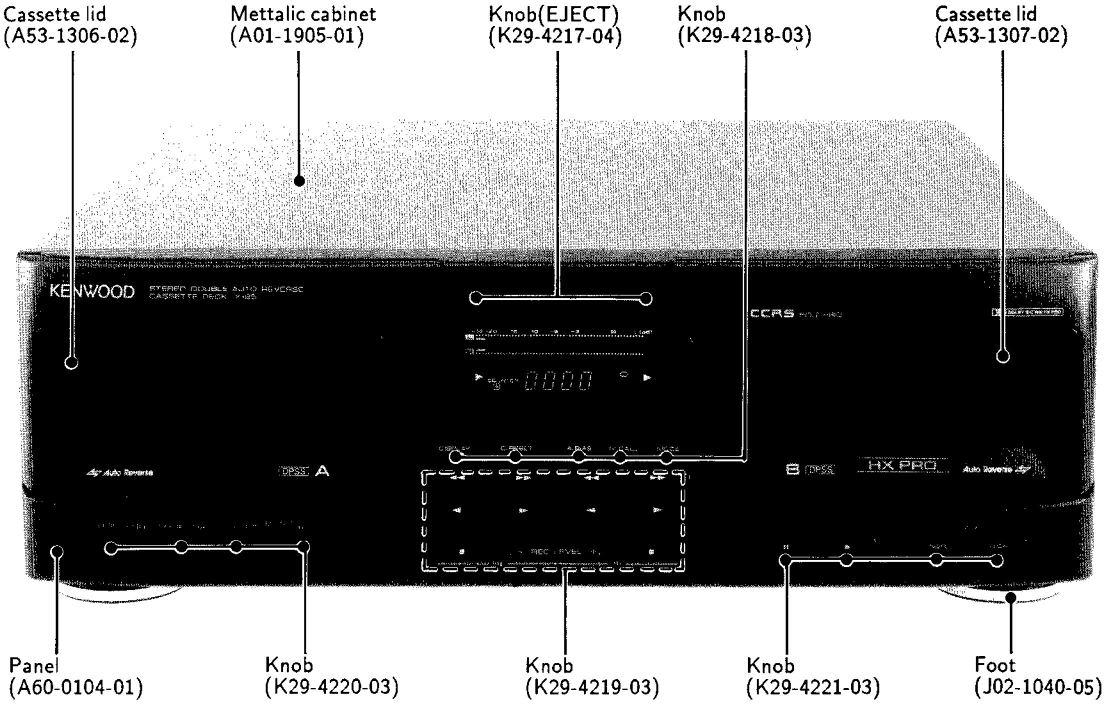
SPECIFICATIONS ···BACK COVER


Cassette lid
(A53-1306-02)
Mettalic cabinet
(A01-1905-01)
Knob(EJECT)
(K29-4217-04)
Knob
(K29-4218-03)
Cassette lid
(A53-1307-02)
KENWOOD
HX PRO
Panel
(A60-0104-01)
Knob
(K29-4220-03)
Knob
(K29-4219-03)
Knob
(K29-4221-03)
Foot
(J02-1040-05)

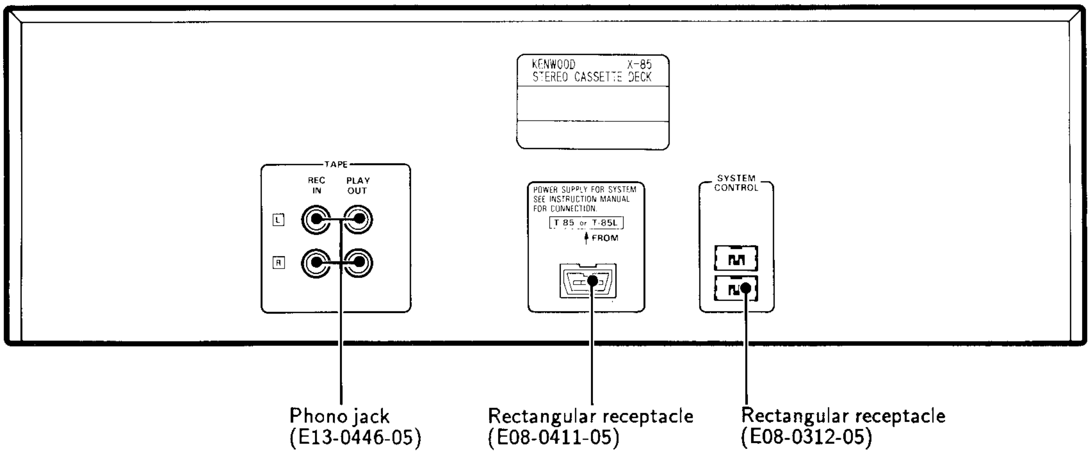
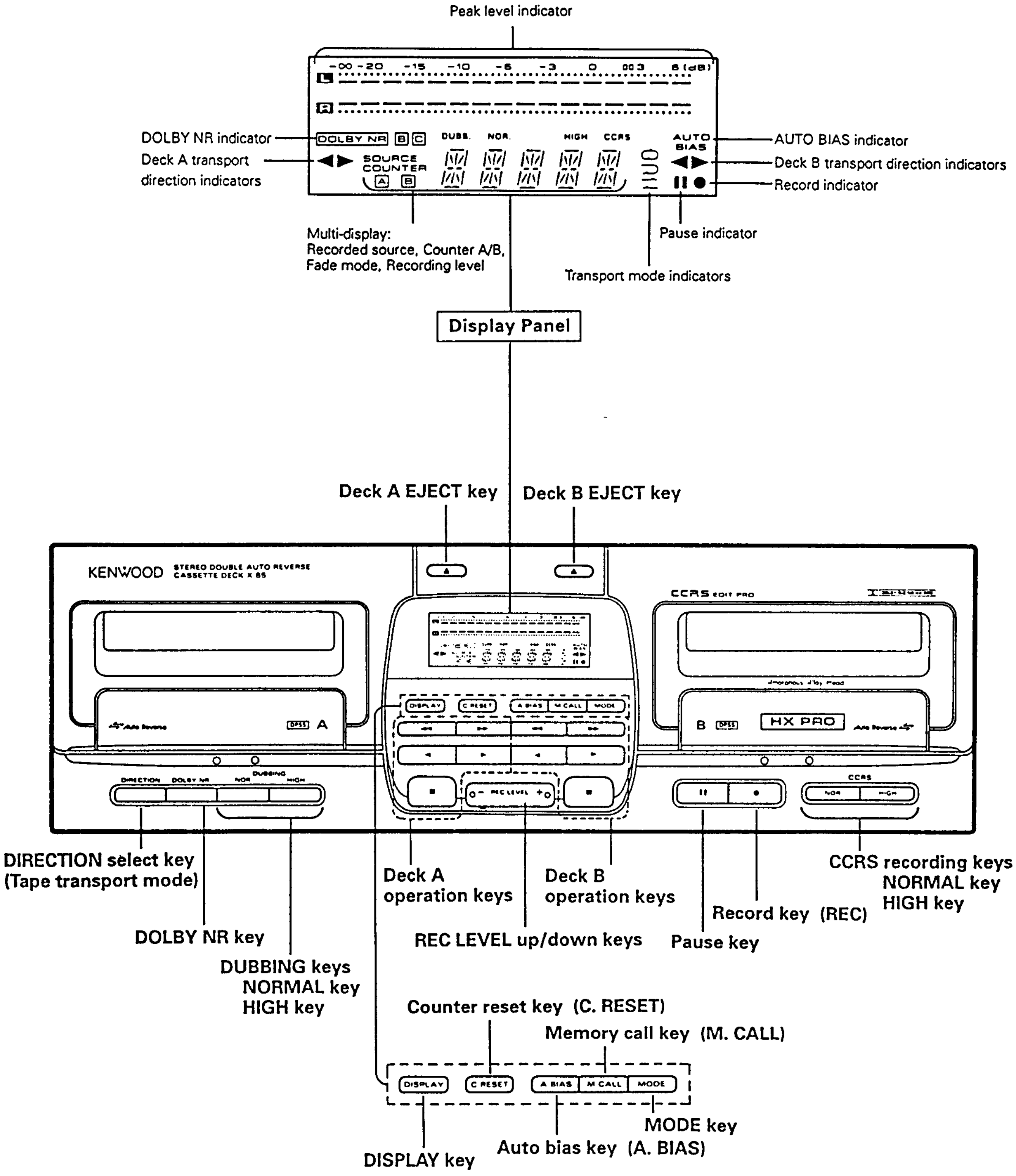

KENWOOD X-85
STEREO CASSETTE DECK
TAPE
REC IN
PLAY OUT
L
R
POWER SUPPLY FOR SYSTEM SEE INSTRUCTION MANUAL FOR CONNECTION.
T 85 or T-85L
FROM
SYSTEM CONTROL
Phono jack
(E13-0446-05)
Rectangular receptacle
(E08-0411-05)
Rectangular receptacle
(E08-0312-05)

PHOTO is X-85

CONTROL AND OPERATIONS

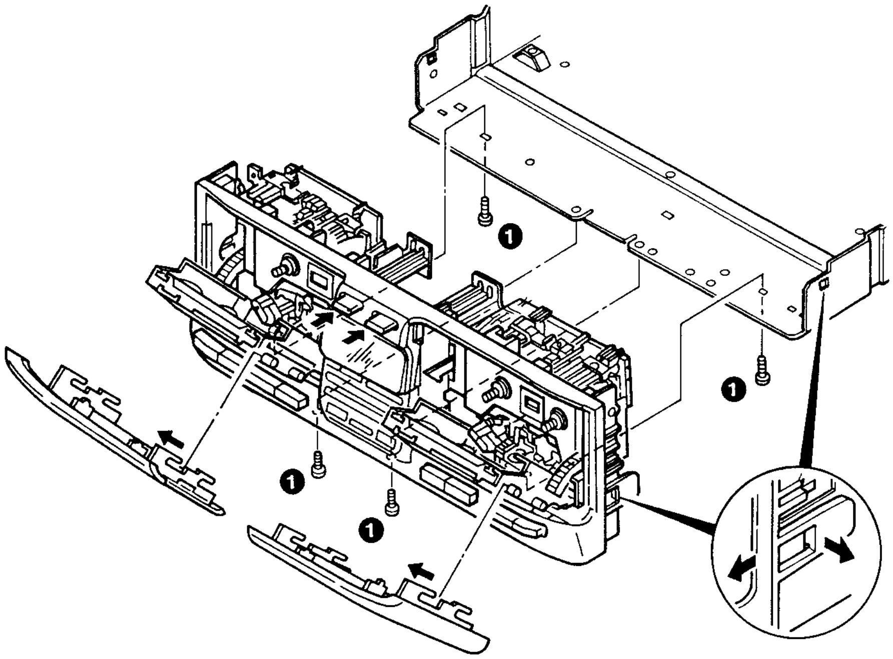

Peak level indicator
-∞ -20 -15 -10 -6 -3 0 003 6 (dB)
L
R
DOLBY NR indicator
DOLBY NR B C
DUBB. NOR. HIGH CCRS
AUTO BIAS
AUTO BIAS indicator
Deck A transport direction indicators
SOURCE COUNTER
A B
Deck B transport direction indicators
Record indicator
Multi-display: Recorded source, Counter A/B, Fade mode, Recording level
Pause indicator
Transport mode indicators
Display Panel
Deck A EJECT key
Deck B EJECT key
KENWOOD
STEREO DOUBLE AUTO REVERSE CASSETTE DECK X 85
CCRS EDIT PRO
Auto Reverse
DPSS A
B DPSS
HX PRO
DIRECTION DOLBY NR NOR DUBBING HIGH
DISPLAY C RESET A BIAS M CALL MODE
REC LEVEL
CCRS NOR HIGH
DIRECTION select key (Tape transport mode)
DOLBY NR key
DUBBING keys NORMAL key HIGH key
Deck A operation keys
REC LEVEL up/down keys
Deck B operation keys
Pause key
Record key (REC)
CCRS recording keys NORMAL key HIGH key
Counter reset key (C. RESET)
Memory call key (M. CALL)
DISPLAY key
Auto bias key (A. BIAS)
MODE key

DISASSEMBLY FOR REPAIR

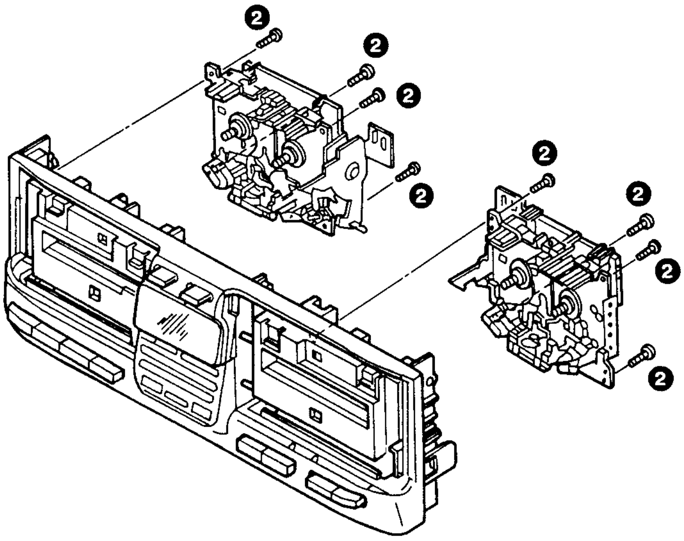
1.Remove the four screws❶ and remove the front panel.

2.Press the EJECT Key , and open the cassette holder.

3.Press the four claws on the side, and remove the cassette lid.



4.Remove the eight screws❷ and remove the mechanism unit.



OPERATION

CD recording (CCRS)

Fade-out edit recording (FADE) — Record the disc, starting with the first track. When the end of the tape is reached, the current track is faded out and recording continues on the other side of the tape.

Erase edit recording (ERASE) — If the end of the tape is reached in the middle of a track, the incomplete track is erased and recorded again from the beginning on the other side.

Cross-fade edit recording (CROSS) — The end of each track is faded into the beginning of the next to produce no breaks between tracks.

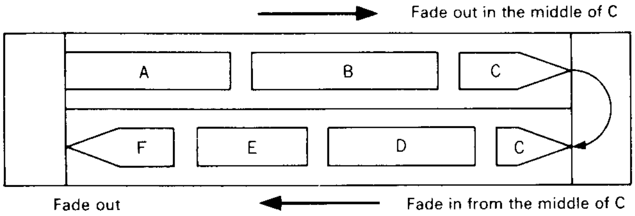
Normal edit recording (EDIT) — The recording time having been specified, the tracks are arranged so that the last track is not broken in the middle. Up to 20 tracks can be recorded.

AI edit recording (AI EDIT) — If the disc is longer than the tape, all the tracks are recorded on one cassette by fading out each track early.

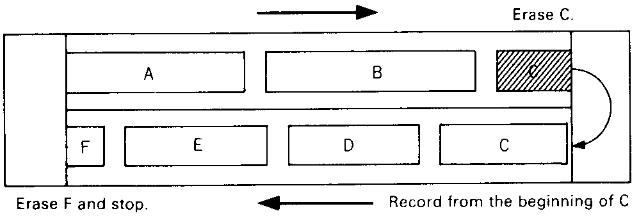
Multi-disc edit recording (MULTI EDIT) — Tracks on several discs can be recorded on one cassette. Fade-out and cross-fade edit recording can be used.

CCRS — double-speed recording — The disc is recorded at double speed. The graphic equalizer is also designed for double-speed operation. Dolby NR recording is not possible. **(Cross-fade recording cannot be performed.)**

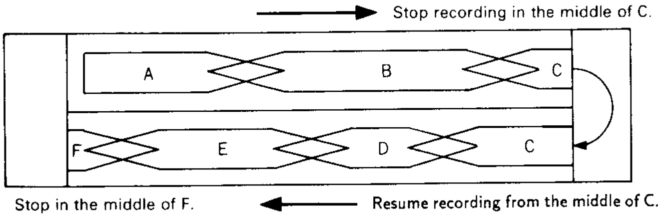
(FADE)


Fade out in the middle of C
A
B
C
F
E
D
C
Fade out
Fade in from the middle of C

(ERASE)

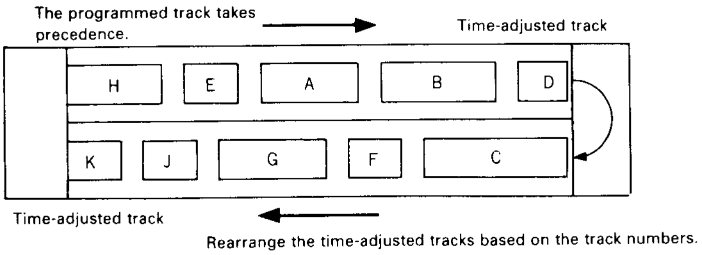

Erase C.
A
B
C
F
E
D
C
Erase F and stop.
Record from the beginning of C

(CROSS)


Stop recording in the middle of C.
A
B
C
F
E
D
C
Stop in the middle of F.
Resume recording from the middle of C.

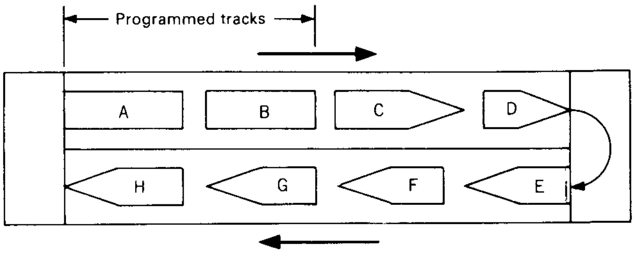
The end is not faded out.

(EDIT)


The programmed track takes precedence.
Time-adjusted track
H
E
A
B
D
K
J
G
F
C
Time-adjusted track
Rearrange the time-adjusted tracks based on the track numbers.

Stop automatically when recording ends.

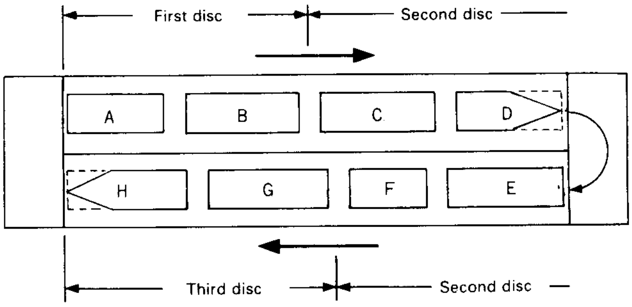
(AI EDIT)


Programmed tracks
A
B
C
D
H
G
F
E

- Programmed tracks are recorded without cutting with precedence. The ends of the other tracks are cut and edited.
- If there is enough tape, all tracks are recoded to the end.
- Recording stops automatically when it ends.

(MULTI EDIT)

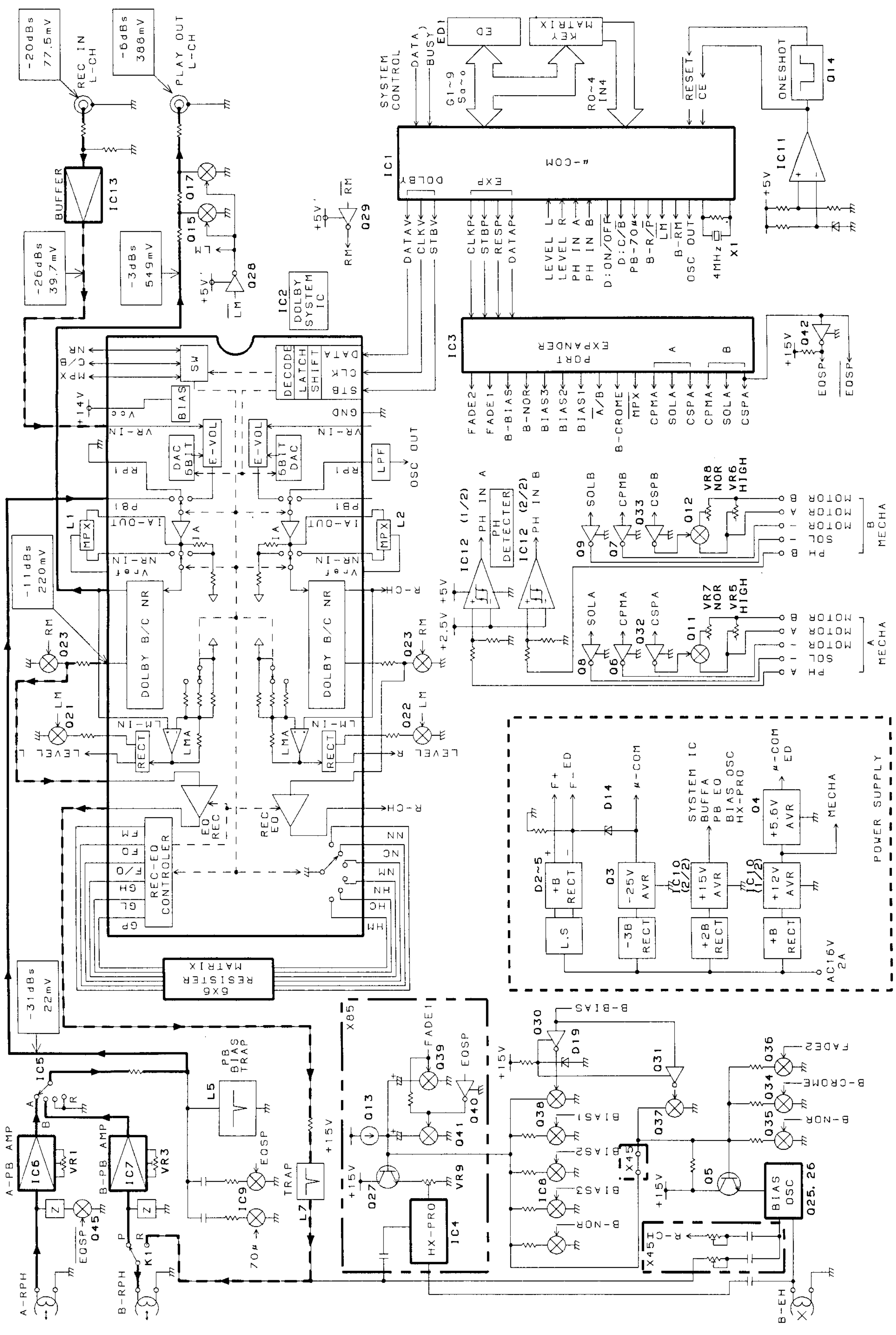
Tracks are recorded as follows (when three discs are recorded in this example).


First disc
Second disc
A
B
C
D
H
G
F
E
Third disc
Second disc

- When recording of the selected tune is finished, both the CD player and cassette deck stop. The CD player tray opens automatically.
- Fades out for recording when a tune is halfway completed at the end of the tape.

X-45/85

BLOCK AND LEVEL DIAGRAM


-20dBs 77.5mV
REC IN L-CH
-6dBs 388mV
PLAY OUT L-CH
BUFFER
IC13
-26dBs 39.7mV
-3dBs 549mV
Q15
Q17
Q28
LM
+5V
RM
Q29
IC2 DOLBY SYSTEM IC
SW
BIAS
DECODE
LATCH
SHIFT
DATA
CLK
STB
GND
VR-IN
E-VOL
DAC 6BIT
LPF
OSC OUT
RP1
PB1
IA-OUT
MPX
L1
L2
NR-IN
Vref
DOLBY B/C NR
-11dBs 220mV
R-CH
Q23
Q21
Q22
LM-IN
LMA
RECT
LEVEL L
LEVEL R
EQ REC
REC EQ
REC-EQ CONTROLER
6X6 RESISTER MATRIX
-31dBs 22mV
IC5
A-PB AMP
IC6
VR1
B-PB AMP
IC7
VR3
Q45
EQSP
A-RPH
B-RPH
K1
L5
PB BIAS TRAP
IC9
70μ
TRAP
L7
+15V
SYSTEM CONTROL
DATA
BUSY
ED1
ED
KEY MATRIX
G1~9
Sa~o
R0~4
IN4
RESET
CE
ONESHOT
Q14
IC11
IC1
μ-COM
DOLBY
EXP
DATAV
CLKV
STBV
CLKP
STBP
RESP
DATAP
LEVEL L
LEVEL R
PH IN A
PH IN B
D:ON/OFF
D:C/B
PB-70μ
B-R/P
LM
B-RM
OSC OUT
4MHz
X1
IC3
PORT EXPANDER
FADE2
FADE1
B-BIAS
B-NOR
BIAS3
BIAS2
BIAS1
A/B
B-CROME
MPX
CPMA
SOLA
CSPA
Q42
EQSP
IC12 (1/2)
IC12 (2/2)
PH DETECTER
+2.5V
SOLB
CPMB
CSPB
Q33
Q12
VR8 NOR
VR6 HIGH
Q9
Q7
B MECHA
MOTOR
SOL
PH
Q8
Q6
Q32
Q11
VR7 NOR
VR5 HIGH
A MECHA
F+
F-ED
D14
μ-COM
SYSTEM IC
BUFFA
PB EQ
BIAS OSC
HX-PRO
μ-COM ED
MECHA
POWER SUPPLY
D2~5
+B RECT
Q3
-25V AVR
IC10 (2/2)
+15V AVR
IC10 (1/2)
+12V AVR
Q4
+5.6V AVR
L.S
-3B RECT
+2B RECT
+B RECT
AC16V 2A
X85
FADE1
Q39
EQSP
Q40
Q13
Q41
Q27
VR9
HX-PRO
IC4
Q30
B-BIAS
D19
Q31
Q38
BIAS1
IC8
BIAS2
BIAS3
B-NOR
Q37
X45
Q5
BIAS OSC
Q25, 26
FADE2
Q36
B-CROME
Q34
Q35
B-NOR
X45
B-EH

CIRCUIT DESCRIPTION

RECORD/PLAYBACK AMPLIFIER UNIT (X28-2380-00)

Ref. No.	Function	Description
IC1	Microcomputer	See page 19
IC2	System IC(Including Dolby system)	
IC3	Expansion I/O	
IC4	Dolby HX-Pro	
IC5	PB A/B SW	Pins 9 and 10 are controlled by ports A and B of IC3.
IC6	A - P.B. EQ	
IC7	B - P.B. EQ	
IC8	B - AUTO BIAS SW	Pin 3 is high, and pins 1 and 2 are low (center value).
IC9	EQ SW	Pins 2 and 4 are controlled by ACSP of IC3, and pins 1 and 3 by 70μ of IC1.
IC10	+15V AVR	
IC11	C.E	
IC12	REEL COMP	
IC13	INPUT BUFFER	
Q1	+12V AVR	
Q2	+15V AVR	
Q3	−22V AVR	
Q4	+5.6V AVR	
Q5	BIAS OSC CONTROL (B)	Controlled by Q37. On during B-REC.
Q6	A MOTOR ON/OFF CONTROL	Controlled by pin 13 of IC3.
Q7	B MOTOR ON/OFF CONTROL	Controlled by pin 16 of IC3.
Q8	A SOL ON/OFF CONTROL	Controlled by pin 14 of IC3.
Q9	B SOL ON/OFF CONTROL	Controlled by pin 17 of IC3.
Q10	+12V AVR	Controlled by pin 1 of IC10
Q11	A MECHA HI/NOR SPEED	Controlled by Q32. On during NOR SPEED.
Q12	B MECHA HI/NOR SPEED	Controlled by Q33. On during NOR SPEED.
Q13	CONSTANT CURRENT (FADE)	Always on.
Q14	POWER ON RESET	Controlled by pin 7 of IC11. Temporarily on during the power-on sequence.
Q15 - Q18	PLAY OUT MUTING	Controlled by Q28.
Q19	PB EQ R/P SW	Controlled by pin 12 of IC1. Off during REC only.
Q20	Remaining LED control	Controlled by pin 55 of IC1.
Q21, Q22	LEVEL AMP CONTROL	Controlled by Q28.
Q23, Q24	B-REC MUTING	Controlled by Q29. Off during B-REC only.
Q25, Q26	B-EH BIAS OSC	Controlled by Q5.
Q27	HX BUFFER	Controlled by Q13.
Q28	PLAY OUT MUTING DRIVER	Controlled by pin 10 of IC1.

CIRCUIT DESCRIPTION

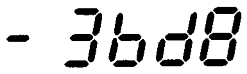
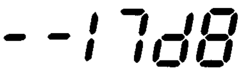
Ref. No.	Function	Description
Q29	B-REC MUTING DRIVER	Controlled by pin 11 of IC1.
Q30	BIAS ON/OFF CONTROL	Controlled by pin 8 of IC3. Off during REC only.
Q31	B-BIAS CONTROL	Controlled by pin 4 of IC3. Off during B-REC only.
Q32	A-SPEED CONTROL	Controlled by pin 15 of IC3. Off during twice the normal speed only.
Q33	B-SPEED CONTROL	Controlled by pin 18 of IC3. Off during twice the normal speed only.
Q34	ERASE BIAS CONTROL	Controlled by pin 19 of IC3. On during CrO_2 only.
Q35	ERASE BIAS CONTROL	Controlled by pin 7 of IC3. On during NOR only.
Q36	ERASE BIAS ON/OFF CONTROL	Controlled by pin 10 of IC3. Off during REC only.
Q37	B-EH BIAS OSC CONTROL	Controlled by Q31. Off during B-REC only.
Q38	BIAS ON/OFF CONTROL	Controlled by Q30. On during NOR only.
Q39	FADE ON/OFF CONTROL	Controlled by pin 9 of IC3. On during fade.
Q40	EQSP inverter	Controlled by Q42. On at high speed.
Q41	HIGH SPEED FADE ON/OFF CONTROL	Controlled by pin 9 of IC3 and Q40. On during high-speed fade.
Q42	$\overline{\text{EQSP}}$ inverter	Controlled by pin 15 of IC3. Off at high speed.
Q43	A/B SW	Controlled by pin 3 of IC3. Off during A-playback only.
Q44	B-HEAD R/P CONTROL	Controlled by pin 12 of IC1. On during B-REC only.
Q45, Q46	HIGH SPEED HEAD EQ	Controlled by pin 15 of IC3. Off at high speed only.

CIRCUIT DESCRIPTION

Description of functions

1. **FWD PLAY, RVS PLAY, FF, REW, REC PAUSE, PLAY PAUSE, and STOP operations are performed with the keys of five A decks and seven B decks.**
2. **Relay play**
   When both decks contain cassettes and the direction mode is ⇄ or ⊃, when the deck playing reaches the end of tape, the other deck plays automatically.
3. Dubbing
   Normal dubbing and high-speed dubbing from A to B are possible with the DUBBING and HIGH-DUBBING keys.
4. DPSS mode
   Skip selection, one-track repeat, dash and play, full repeat, rewind play, rerecord standby, and autorecord mute operations are performed by pressing two keys at the same time or pressing keys while the deck is operating.
5. Auto bias
   The 400-Hz and 10-kHz record/play levels are determined to set the optimum bias for the tape. (Normal tape)
6. CCRS
   The CD can be recorded automatically at the optimum level and bias.
7. Serial communication function
   Full remote control, bidirectional easy operation, and CD player synchronized recording are possible by combining with a system with a serial communication bus. Timer recording and playback are set with a tuner with a timer (T-xxx), and instructions are transmitted to the deck by serial communication.
8. CCRS operation mode setting function
   Three states, FADE OUT, ERASE, CROSS FADE, can be set with the FADE MODE key.
9. Auto-bias recall function
   The bias value of the previous auto-bias can be recalled with the MEMORY RECALL. A reset can be performed immediately when the same tape is used.
10. Save function
    The tape direction and the recording level for each recording source are saved.
    i) The tape direction of the last play/record is saved.
    ii) The recording level is saved for each source. When the REC VR key is pressed and the recording level changes, the recording level data for the currently selected source is rewritten. The recording source is the tuner when the power is switched on because the source in the deck amplifier selector memory is selected. Then, the source selected with the amplifier selector becomes effective.
11. **Multiplex automatic on/off**
    In the REC mode, a multiplex on/off pin (IC3) is set low to control IC2 (system IC) when the amplifier selector memory of a deck is set as a tuner. It is set high when normal operation mode and the selector is set as other than a tuner in REC mode.
12. Two speeds (double-speed recording), NORMAL and HIGH, can be selected with the CCRS start key.
13. CCRS allows one or more discs to be used in each edit mode when MULTI-DISC EDIT is selected. (FADE OUT and CROSS-FADE modes only)

CIRCUIT DESCRIPTION

Key name	Function	Display
FWD PLAY "▶" (common to decks A and B)	With a cassette half, the tape is played in he forward direction. When this key is pressed during forward play, that one tune is repeated to play. While the other deck is in recording or recording pause, the operation of this key is disabled.	The counter display of the deck of which the key is pressed is engaged.
RVS PLAY "◀" (common to decks A and B)	With a cassette half, the tape is played in the reverse direction. When this key is pressed during reverse play, that one tune is repeated to play. While the other deck is in recording or recording pause, the operation of this key is disabled.	The counter display of the deck of which the key is pressed is engaged.
FF "▶▶" (common to decks A and B)	The tape is fast wound up to the right reel. When this key is pressed during play, the skip music scan is made, whereas when it is pressed during reverse recording, the re-recording standby mode is engaged.	The counter display of the deck of which the key is pressed is engaged.
REW "◀◀" (common to decks A and B)	The tape is wound up to the left reel. When this key is pressed during play, the skip music scan is made, whereas when it is pressed during forward recording, the re-recording standby ode is engaged.	The counter display of the deck of which the key is pressed is engaged.
STOP "■" (common to decks A and B)	All operation is stopped.	
REC "●/◆" **(deck B)**	Recording is made in the current head direction. If in recording, ARM is engaged.	The counter display of the deck of which the key is pressed is engaged. REC indicator lights (●). Flickers during ARM and lights after termination.(**II** ●).
PAUSE "**II**" **(deck B)**	If in recoring, the recording pause mode is engaged, while if in play, the play pause mode is engaged.	PAUSE indicator lights (**II**).
REC LEVEL UP	When this key is pressed continuously for more than 0.5 second, the recording level is raised up in intervals of 0.13 second. **It increases in 2dB units for −∞ to −20 dB and in 1dB units for −20 to 0 dB.**	Example) 
REC LEVEL DOWN	When this key is pressed continuously for more than 0.5 second, the recording level is lowered down in intervals of 0.13 second. **It increases in 2dB units for −∞ to −20 dB and in 1dB units for −20 to 0 dB.**	Example) 
AUTO BIAS (deck B only)	If both decks are stopped and deck B has a recordable tape, automatic bias adjustment takes place.	AUTO BIAS indicator flickers, and then lights upon the completion of bias setting.
NOR SPEED DUBBING	Dubbing is made from deck A to B at normal speed. When this key is pressed during normal dubbing, deck B enters ARM. When it is pressed again, normal dubbing is restored.	DUBB, NOR and (B) REC (●) indicators light. During ARM, REC indicator only flickers.
HIGH SPEED DUBBING	Dubbing is made from deck A to B at double speed. When this key is pressed during double-speed dubbing, deck B enters ARM.	DUBB, HIGH and REC (●) indicators light. During ARM, (B) REC indicator only flickers.

CIRCUIT DESCRIPTION

Key name	Function	Display
DISPLAY	The display contents of the FL counter display section is changed in the following manner: → Deck A counter → Deck B counter → Recording source → Recording level ↩	No level is displayed when the selector is set as a tape.
C. RESET	When this key is pressed during counter display, the counter is reset to "0000".	Example) A 00 00
Direction	A following operation mode is selected at the time of auto stop detection. ⇌ ....One-way operation ⊃ ....Reverse operation ⟲ ....Endless operation	Changes in cycles. → ⇌ → ⊃ → ⟲ ↩
Dolby	The Dolby noise reduction mode is set. B ....Dolby B noise reduction ON OFF.............Dolby noise reduction OFF C ....Dolby C noise reduction ON	Changes in cycles. → OFF → B → C ↩
M CALL (B ONLY)	If both decks are stopped and deck B has a recordable tape, the last set bias value is recalled.	The AUTO BIAS indicator lights.
MODE	Select the CCRS edit mode. The modes are changed in cycles. → FADE (OUT) → ERASE → CROSS (FADE) ↩	FADE, ERASE, or CROSS is displayed on the character display.
N. CCRS (NORMAL)	The CD recording level is automatically adjusted in synchronization with the CD. — The recording speed is normal.	Speed indicator NOR lights.
H. CCRS (HIGH)	Above operation — The recording speed is double speed.	Above display Speed indicator HIGH lights.

Mechanism switch name	Function	Display
Cassette half detection switch	This switch turns ON when provided with a cassette half. With this switch OFF, the operations of any key and the dubbing key of that deck are disabled. For deck B, the operations of the AUTO BIAS and CCRS keys are also disabled.	Example) A - - - -:- - - - Display for without cassette half on deck A
Forward recording enable switch (B deck)	This switch turns ON when provided with a click for enabling recording in the forward direction. With this switch OFF, the forward recording is disabled.	
Reverse recording enable switch (B deck)	This switch turns ON when provided with a click for enabling recording in the reverse direction. With this switch OFF, the reverse recording is disabled.	
CrO_2 detection switch Metal detection switch	See table below	

Tape	CrO_2	Metal
Metal	OFF	OFF
CrO_2	OFF	ON
Normal	ON	ON

CIRCUIT DESCRIPTION

Function name	Key symbol	Function
Rewind play	"◀◀ + ▶" or "▶▶ + ◀"	After the tape is rewound up to the tape end, the first tune is searched for and then is played after its searching out.
Dash and play (Full repeat)	◀◀ + ▶▶	When the no-tune state continues for more than 10 seconds during the play mode, the tape is cued. When the head of the next tune is thus scanned out, the play mode is restored. A full repeat function is also provided by means of the reverse mode switch. ⇄ ....One side full repeat, 8 times ⊃ ....Double-side full repeat, 8 times (16 sides of tape) ⊂⊃ ....Double-side relay repeat (29 to 31 sides A and B of tape). When the other deck is not loaded with a cassette half, the tape stops at the RVS end (1 to 2 sides of tape).
Zero stop	"◀◀ + ■" or "▶▶ + ■"	After the tape is rewound or fast forwarded until the counter goes to "0000", the tape stops. However, one deck is subject to the zero stop operaton, after which the use of counter is changed to the counter of the other deck. Then, when the associated keys of that deck are pressed, this latter deck can also be subject to the zero stop operation parallelly.
Rerec standby	(●)▶ ··· ◀◀ ◀(●) ··· ▶▶	Performed by pressing the rewind key while recording. The tape is rewound, the end of the previous track is detection, a two-second blank section is found, and the deck stops.

KEY MATRIX

	G1	G2	G3	G4	G5	G6	G7
KR 5	X-85	TPLAY	TREC	B HEAD	A HEAD	TEST	
KR 4	CCRS MODE	AUTO BIAS	M CALL	B METAL	A HALF	DISP	C RESET
KR 3	B FWD	B STOP		B HALF	A CrO2	A STOP	A FWD
KR 2	B RVS	B REC	NCCRS	B RINH	NDUBB	DOLBY	A RVS
KR 1	B FF	B PAUSE	HCCRS	B CrO2	HDUBB	DIR	A FF
KR 0	B RWD	VR UP		B FINH		VR DWN	A RWD

CIRCUIT DESCRIPTION

Synchronous recording (CD/LD and deck, and player and deck)

The deck can obtain the current REC source by continuously analyzing the selector code from the amplifier. The REC source may not change after the deck enters the REC mode. As a result, the deck can be synchronized by analyzing the code from the unit presently in the REC mode.

(A) Synchronized Operation between CD and deck.

CD operation / Deck State	STOP→PLAY	PAUSE→PLAY	PLAY→PAUSE	PLAY→STOP	PAUSE→STOP	PLAY → Tray open	PAUSE → Tray open
REC (transport state)	Unchanged	Unchanged	Enters REC PAUSE mode 4 seconds after ARM state is entered.	Enters STOP mode 4 seconds after ARM state is entered.	←	←	←
ARM (auto REC muting)	Stops ARM and enters REC mode.	←	Enters REC PAUSE mode after current ARM time-up.	Enters STOP mode after current ARM time-up.	←	←	←
REC PAUSE	Enters REC mode	←	Unchanged	STOP	←	←	←

(B) Synchronized Operation between player and deck.

Player operation / Deck State	UP→DOWN (MUTE ON→OFF)	DOWN→UP (MUTE OFF→ON)	Arm return (returns to arm rest)
REC (transport state)	Unchanged	Enters ARM state. Enters REC PAUSE mode after time-up (4 seconds).	Enters STOP mode 4 seconds after ARM state is entered
ARM (auto REC muting)	Stops ARM and returns to REC mode.	Enter REC PAUSE mode after the current ARM time-up.	Enter STOP mode after the current ARM time-up
REC PAUSE	Enter REC mode.	Unchanged	STOP

CIRCUIT DESCRIPTION

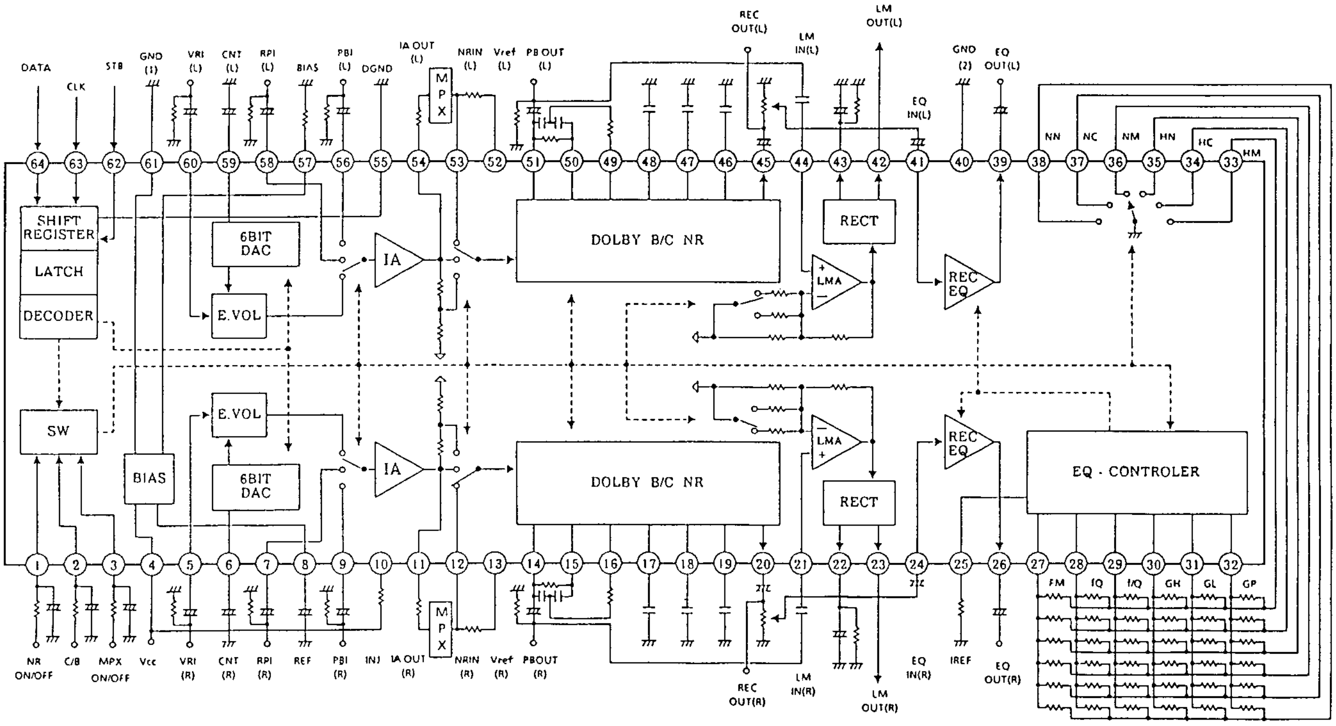
Audio Signal Processing System IC for Cassette Deck (HA12157NT)

The HA12157NT is an audio signal processing LSI chip integrates potentiometers, recording equalizers, level meters, and Dolby noise reduction systems on one chip.

Internal Functions :

Recording equalizer × 2 channels
Dolby B/C noise reduction × 2 channels
Potentiometer × 2 channels
Level meter × 2 channels

Block Diagram


DATA
CLK
STB
GND (1)
VRI (L)
CNT (L)
RPI (L)
BIAS
PBI (L)
DGND
IA OUT (L)
NRIN (L)
Vref (L)
PB OUT (L)
REC OUT(L)
LM IN(L)
LM OUT(L)
EQ IN(L)
GND (2)
EQ OUT(L)
NN
NC
NM
HN
HC
HM
64
63
62
61
60
59
58
57
56
55
54
53
52
51
50
49
48
47
46
45
44
43
42
41
40
39
38
37
36
35
34
33
SHIFT REGISTER
LATCH
DECODER
6BIT DAC
E.VOL
IA
MPX
DOLBY B/C NR
RECT
LMA
REC EQ
SW
BIAS
EQ · CONTROLER
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
FM
fQ
f/Q
GH
GL
GP
NR ON/OFF
C/B
MPX ON/OFF
Vcc
VRI (R)
CNT (R)
RPI (R)
REF
PBI (R)
INJ
IA OUT (R)
NRIN (R)
Vref (R)
PBOUT (R)
REC OUT(R)
LM IN(R)
LM OUT(R)
EQ IN(R)
IREF
EQ OUT(R)

CIRCUIT DESCRIPTION

Description of pins [HA12157NT]

Pin No.	Name	Function
1	NR ON/OFF	Mode Control input
2	C/B	
3	MPX ON/OFF	
4	VCC	Power Supply
5	VRI	Volume input
60		
6	CNT	DAC output Volume control input
59		
7	RPI	Recording input
58		
8	REF	Ripple filter
9	PBI	Playback input
56		
10	INJ	Injection current input for I_2L
11	IA OUT	Input amplifier output
54		
12	NR IN	Noise reduction processor input
53		
13	VREF	Reference voltage buffer output
52		
14	PB OUT	Playback (Decode) output
51		
15	SS1	Spectral skewing amplifier input
50		
16	SS2	Spectral skewing amplifier output
49		
17	CCR	Current controlled resistor output
48		
18	HLS DET	Time constant pin for rectifier
47		
19	LLS DET	
46		
20	REC OUT	Recording (Encode) output
45		
21	LM IN	Level meter input
44		
22	LMD	Time constant pin for level meter
43		
23	LM OUT	Level meter output
42		
24	EQ IN	Equalizer input
41		
25	IREF	EQ reference current input
26	EQ OUT	Equalizer output
39		
27	FM	EQ parameter current input
28	fQ	
29	f/Q	
30	GH	
31	GL	
32	GP	
33	HM	EQ parameter selector
34	HC	
35	HN	
36	NM	
37	NC	
38	NN	
40	GND	Ground
61		
55	D GND	Digital (Logic) ground
57	BIAS	Dolby NR reference current input
62	STB	Mode control input
63	CLK	
64	DATA	

Operating Mode Control

Electronic switches are used in the HA12157. Noise reduction ON/OFF, C/B, and Multiplex ON/OFF signals controlled by parallel data (DC voltage) and a switch controlled by serial data are provided in the operating mode.

Control Using Parallel Data

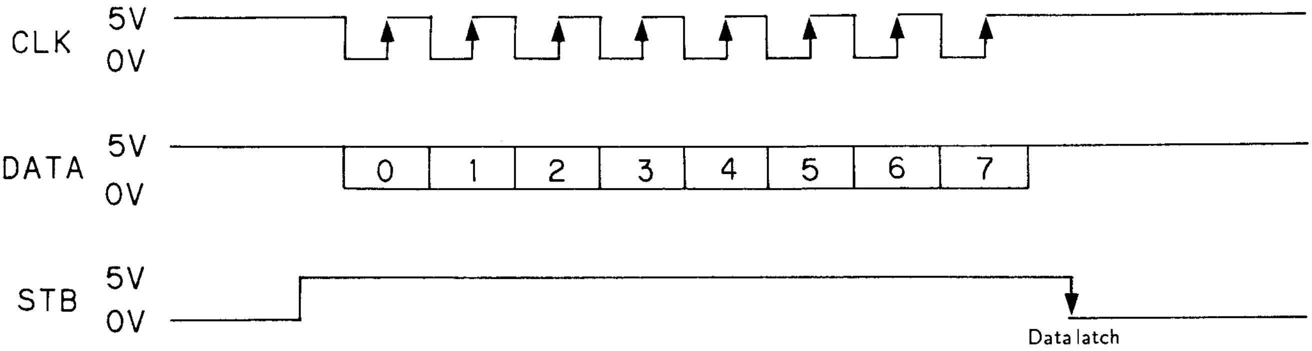
Dolby noise reduction and multiplex filter are controlled by the input signal at pins ①, ②, and ③.

Pin No.	Lo	Hi
①	NR-OFF	NR-ON
②	B-NR	C-NR
③	MPX-ON	MPX-OFF

CIRCUIT DESCRIPTION

Serial Data Format

An 8-bit shift register is used as the serial data format. The shift register fetches CLK and DATA signals only when the STB signal is high, then latches data at the falling edge of the STB signal.



The following control is performed according to the data contents :

<table>
<tr><th>bit No.</th><th colspan="3">Control register</th><th colspan="3">Volume register</th></tr>
<tr><td rowspan="2">0</td><td rowspan="2">TAPE SELECT 1</td><td>H</td><td rowspan="4"><table><tr><th>TS 1 / TS 2</th><th>H</th><th>L</th></tr><tr><td>H</td><td>METAL</td><td>NORMAL</td></tr><tr><td>L</td><td>CrO_2</td><td>NORMAL</td></tr></table></td><td rowspan="2">DAC 0</td><td rowspan="12" colspan="2"><table><tr><th colspan="6">bit No.</th><th rowspan="2">Gain</th></tr><tr><th>5</th><th>4</th><th>3</th><th>2</th><th>1</th><th>0</th></tr><tr><td>L</td><td>L</td><td>L</td><td>L</td><td>L</td><td>L</td><td>High</td></tr><tr><td>L</td><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td><td>↑</td></tr><tr><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td><td>L</td><td></td></tr><tr><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td><td>H</td><td></td></tr><tr><td>H</td><td>H</td><td>H</td><td>H</td><td>L</td><td>H</td><td>↓</td></tr><tr><td>H</td><td>H</td><td>H</td><td>H</td><td>H</td><td>L</td><td>Low</td></tr><tr><td>H</td><td>H</td><td>H</td><td>H</td><td>H</td><td>H</td><td>Mute</td></tr></table>Enters the muting state when all bits are set high.</td></tr>
<tr><td>L</td></tr>
<tr><td rowspan="2">1</td><td rowspan="2">TAPE SELECT 2</td><td>H</td><td rowspan="2">DAC 1</td></tr>
<tr><td>L</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">TAPE SPEED</td><td>H</td><td>Twice normal speed selection</td><td rowspan="2">DAC 2</td></tr>
<tr><td>L</td><td>Normal speed selection</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">METER SENSITIVITY</td><td>H</td><td>Meter sensitivity improved by 20 dB</td><td rowspan="2">DAC 3</td></tr>
<tr><td>L</td><td>Meter sensitivity normal</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">INPUT SELECT 1</td><td>H</td><td rowspan="4"><table><tr><th>IS 1 / IS 2</th><th>H</th><th>L</th></tr><tr><td>H</td><td>PBI</td><td>VRI</td></tr><tr><td>L</td><td>RPI</td><td>VRI</td></tr></table></td><td rowspan="2">DAC 4</td></tr>
<tr><td>L</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">INPUT SELECT 2</td><td>H</td><td rowspan="2">DAC 5</td></tr>
<tr><td>L</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">REC/PB</td><td>H</td><td>Playback mode selection</td><td rowspan="2">R/L SELECT</td><td>H</td><td>R-channel register selection</td></tr>
<tr><td>L</td><td>Recording mode selection</td><td>L</td><td>L-channel register selection</td></tr>
<tr><td>7</td><td>REGISTER SELECT</td><td>H</td><td>Control register selection</td><td>REGISTER SELECT</td><td>L</td><td>Volume register selection</td></tr>
</table>

* Whether to control the condition or volume control is judged by the content of bit 7.

CIRCUIT DESCRIPTION

Test Mode

Setting method :

TEST(pin 10 and pin 7) ⑩ ▶|– ⑦
TIMER PLAY(pin 9 and pin 7) ⑨ ▶|– ⑦
TIMER REC(pin 8 and pin 7) ⑧ ▶|– ⑦

The mode is set by shorting the above two pins with a diode, then switch the power on.
To start during the power-on sequence, supply AC power while pressing the STOP key of deck A.

Cancel method :

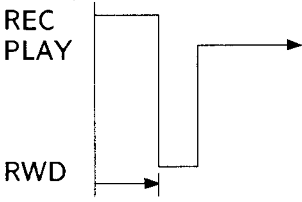
Press the pause key(for both decks) to cancel the test mode.

Test mode operation

(1) Lamp display : All the indicators turn on 500 ms after the power is switched on and remain on for 1500 ms.
(2) Mechanical switch display : Each switch state is displayed on the level meter when the line muting signal is on.

F.REC INH	CrO_2	Metal	R.REC INH
(−6 dB)	(−3 dB)	(0 dB)	(+6 dB)

The level meter lights when the mechanical switch is set to ON. Deck A set to the left channel and deck B to the right channel.
(3) Recording level : The recording level is changed to three steps (−∞dB↔−22 dB↔0 dB) with the UP/DOWN key.
(4) Twice speed recording : Recording is initiated at HIGH speed with the H.CCRS key.
(5) Direct change : The REC key can be accepted from the play mode.
(6) Record for 4 seconds :



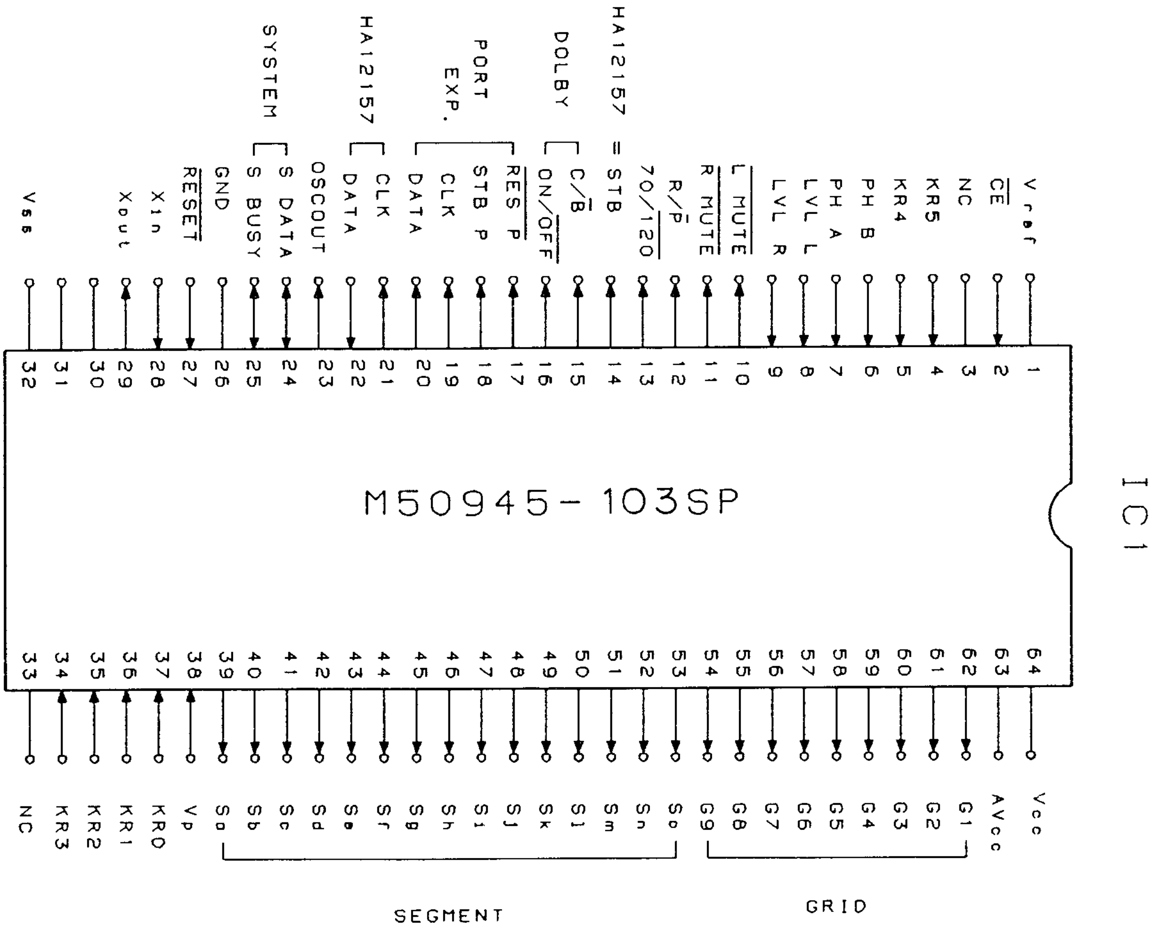
Recorded for 4 seconds, rewound to the beginning, then plays back (Can be repeated.)

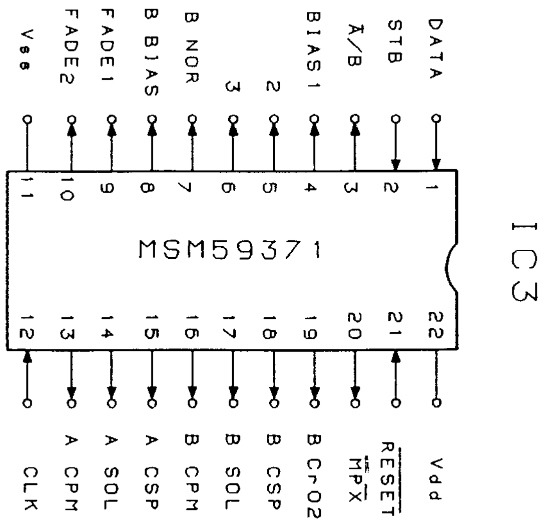
(7) Playback speed switching : The tape is played back at high speed in the forward direction by pressing the FF key. (The Forward PLAY, Reverse PLAY, and RWD keys cannot be used for playback.)
(8) Input level attenuation : The REC PAUSE mode is entered by pressing the N : CCRS key. In this case, an attenuator is activated so that the output is -4 dBm when a signal is input. (When deck A stops and deck B has a recordable tape)
(9) Auto bias : Enters the mode that is completed in half (20 seconds) the usual time. (When deck A stops and deck B has a recordable tape)

CIRCUIT DESCRIPTION

Microprocessor [M50945-103SP]

Pin description


IC1
M50945-103SP
1 Vref
2 CE
3 NC
4 KR5
5 KR4
6 PH B
7 PH A
8 LVL L
9 LVL R
10 L MUTE
11 R MUTE
12 R/P
13 70/120
14 STB
HA12157 = STB
15 C/B
16 ON/OFF
DOLBY
17 RES P
18 STB P
19 CLK
20 DATA
PORT EXP.
21 CLK
22 DATA
HA12157
23 OSCOUT
24 S DATA
25 S BUSY
SYSTEM
26 GND
27 RESET
28 Xin
29 Xout
32 Vss
33 NC
34 KR3
35 KR2
36 KR1
37 KR0
38 Vp
39 Sa
40 Sb
41 Sc
42 Sd
43 Se
44 Sf
45 Sg
46 Sh
47 Si
48 Sj
49 Sk
50 Sl
51 Sm
52 Sn
53 So
54 G9
55 G8
56 G7
57 G6
58 G5
59 G4
60 G3
61 G2
62 G1
63 AVcc
64 Vcc
SEGMENT
GRID


IC3
MSM59371
1 DATA
2 STB
3 A/B
4 BIAS1
5 2
6 3
7 B NOR
8 B BIAS
9 FADE1
10 FADE2
11 Vss
12 CLK
13 A CPM
14 A SOL
15 A CSP
16 B CPM
17 B SOL
18 B CSP
19 B CrO2
20 MPX
21 RESET
22 Vdd

CIRCUIT DESCRIPTION

Description of pins

[M50945-103SP]

Pin No.	Pin name	I/O	Name	Function
1	V_{REF}		V_{REF}	Standard Voltage for A/D Converter (5.0 V)
2	IN7	I	$\overline{CE}$	**Back up detection input** 0 : BACKUP 1 : NORMALLY
3	IN6	I	NC	
4	IN5	I	KR5	Key return input Active: High
5	IN4	I	KR4	Key return input Active: High
6	IN3	I	PHIN B	B mechanism rotation detection sensor input
7	IN2	I	PHIN A	A mechanism rotation detection sensor input
8	IN1	I	LEVEL L	Music signal input L ch
9	IN0	I	LEVEL R	Music signal input R ch
10	P47	O	L MUTE	Line mute control output 0: ON 1: OFF
11	P46	O	R MUTE	B mechanism record mute 0: ON 1: OFF
12	P45	O	R/P	B mechanism REC/PLAY selection 0: PLAY 1: REC
13	P44	O	PEQ	PLAY EQ selection 0: 120 μ 1: 70 μ
14	P43	O	STB	**STBP Output (System IC control)**
15	P42	O	DOL C/$\overline{B}$	**DOLBY B/C selection** 0 : B 1 : C
16	P41	O	DOL ON/$\overline{OFF}$	**DOLBY ON/OFF selection** 0 : OFF 1 : ON
17	P40	O	RESP	**Reset terminal for P.EXP** 0: reset 1: xxx
18	P37	O	STBP	**STBP output for output port extension IC Connected to STBP of P.EXP**
19	P36	O	CLK	**Clock pulse output for output port extension IC Connected to CLK of P.EXP**
20	P35	O	DATA	**Data output for output port extension IC Connected to DATA of P.EXP**
21	P34	O	CLK	**System IC clock**
22	P33	I	DATA	**System IC data**
23	P32	O	OSC OUT	AUTO BIAS square wave output
24	P31	I/O	S. DATA	System control serial data I/O
25	P30	I/O	S. BUSY	System control serial busy I/O
26	CNVss	I		NC GND
27	RESET	I	RESET	Reset signal input
28	XIN	I	X in	System clock input
29	XOUT	O	X out	System clock output
30	XCIN	I		NC GND
31	XCOUT	O		NC OPEN
32	Vss			GND pin GND
33	ϕ	O		NC OPEN
34	R3	I	KR3	Key return input Active: High
35	R2	I	KR2	Key return input Active: High
36	R1	I	KR1	Key return input Active: High
37	R0	I	KR0	Key return input Active: High

CIRCUIT DESCRIPTION

Pin No.	Pin name	I/O	Name	Function
38	VP	I	−30V	Pull down input for P0, P1 and P2 (−30V)
39	P17	O	Sa	Fluorescent display segment drive output
40	P16	O	Sb	Fluorescent display segment drive output
41	P15	O	Sc	Fluorescent display segment drive output
42	P14	O	Sd	Fluorescent display segment drive output
43	P13	O	Se	Fluorescent display segment drive output
44	P12	O	Sf	Fluorescent display segment drive output
45	P11	O	Sg	Fluorescent display segment drive output
46	P10	O	Sh	Fluorescent display segment drive output
47	P07	O	Si	Fluorescent display segment drive output
48	P06	O	Sj	Fluorescent display segment drive output
49	P05	O	Sk	Fluorescent display segment drive output
50	P04	O	Sl	Fluorescent display segment drive output
51	P03	O	Sm	Fluorescent display segment drive output
52	P02	O	Sn	Fluorescent display segment drive output
53	P01	O	So	Fluorescent display segment drive output
54	P00	O	G9	Fluorescent display grid drive output for key scan
55	P27	O	G8	Fluorescent display grid drive output for key scan
56	P26	O	G7	Fluorescent display grid drive output for key scan
57	P25	O	G6	Fluorescent display grid drive output for key scan
58	P24	O	G5	Fluorescent display grid drive output for key scan
59	P23	O	G4	Fluorescent display grid drive output for key scan
60	P22	O	G3	Fluorescent display grid drive output for key scan
61	P21	O	G2	Fluorescent display grid drive output for key scan
62	P20	O	G1	Fluorescent display grid drive output for key scan
63	AVcc		AVcc	Power supply for A/D converter (5V)
64	Vcc		Vcc	Power supply pin (5V)

CIRCUIT DESCRIPTION

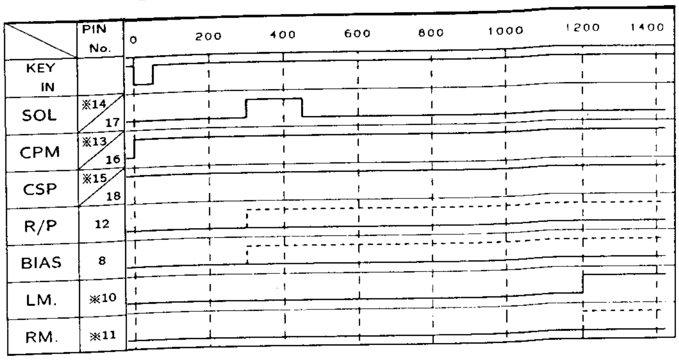
Expansion IC [MSM59371]

Description of pins

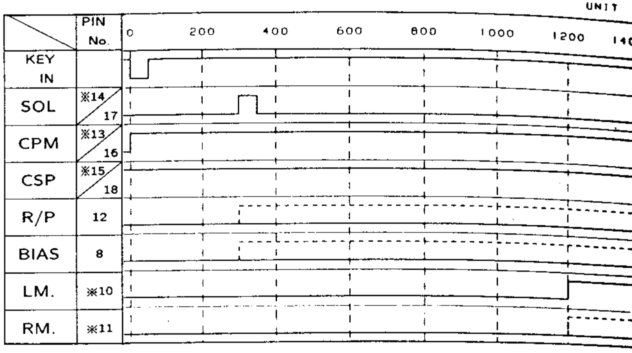
<table>
<tr><th>Pin No.</th><th>Name</th><th>I/O</th><th>Function</th></tr>
<tr><td>1</td><td>DATA</td><td>I</td><td>Data input pin</td></tr>
<tr><td>2</td><td>STB</td><td>I</td><td>Strobe input pin</td></tr>
<tr><td>3</td><td>$\overline{A}$/B</td><td>O</td><td>PB EQ A/B select control
H : B
L : A</td></tr>
<tr><td>4</td><td>BIAS 1</td><td>O</td><td rowspan="3"><table><tr><th></th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th></tr><tr><td>BIAS 1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>BIAS 2</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td></tr><tr><td>BIAS 3</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td></tr></table>A BIAS : 1 - 5
NOR, CrO_2 : 3
METAL : 6</td></tr>
<tr><td>5</td><td>BIAS 2</td><td>O</td></tr>
<tr><td>6</td><td>BIAS 3</td><td>O</td></tr>
<tr><td>7</td><td>B NOR</td><td>O</td><td>Tape selection
H : NOR
L : CrO_2, MET</td></tr>
<tr><td>8</td><td>B BIAS</td><td>O</td><td>BIAS ON/OFF
H : REC
L : PLAY</td></tr>
<tr><td>9</td><td>FADE 1</td><td>O</td><td>H : SLOW
L : NOR</td></tr>
<tr><td>10</td><td>FADE 2</td><td>O</td><td>EH bias ON/OFF</td></tr>
<tr><td>11</td><td>V_{ss}</td><td></td><td>GND</td></tr>
<tr><td>12</td><td>CLK</td><td>I</td><td>Clock input pin</td></tr>
<tr><td>13</td><td>A CPM</td><td>O</td><td>Capstan motor ON/OFF control
H : ON
L : OFF</td></tr>
<tr><td>14</td><td>A SOL</td><td>O</td><td>Solenoid ON/OFF control
H : ON
L : OFF</td></tr>
<tr><td>15</td><td>A CSP</td><td>O</td><td>Capstan motor speed control
H : NOR
L : HI</td></tr>
<tr><td>16</td><td>B CPM</td><td>O</td><td>Capstan motor ON/OFF control
H : ON
L : OFF</td></tr>
<tr><td>17</td><td>B SOL</td><td>O</td><td>Solenoid ON/OFF control
H : ON
L : OFF</td></tr>
<tr><td>18</td><td>B CSP</td><td>O</td><td>Capstan motor speed control
H : NOR
L : HI</td></tr>
<tr><td>19</td><td>B CrO_2</td><td>O</td><td>Tape selection
H : CrO_2
L : NOR, MET</td></tr>
<tr><td>20</td><td>$\overline{MPX}$</td><td>O</td><td>H : OTHERS
L : TUNER</td></tr>
<tr><td>21</td><td>RESET</td><td>I</td><td>Reset : L</td></tr>
<tr><td>22</td><td>Vdd</td><td></td><td>Power supply</td></tr>
</table>

CIRCUIT DESCRIPTION

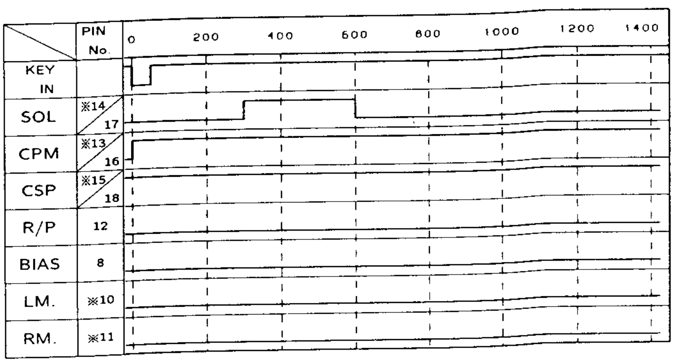
STOP TO FWD PLAY/REC(---)



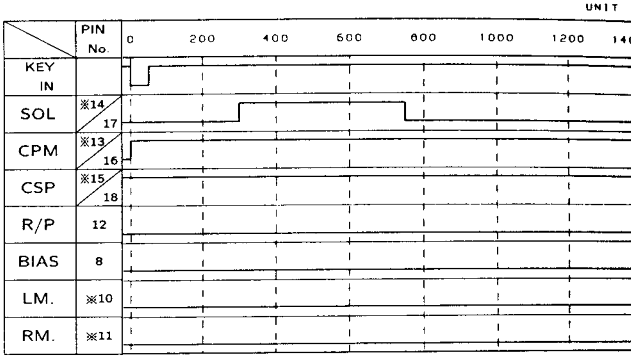
STOP TO RVS PLAY/REC(---)



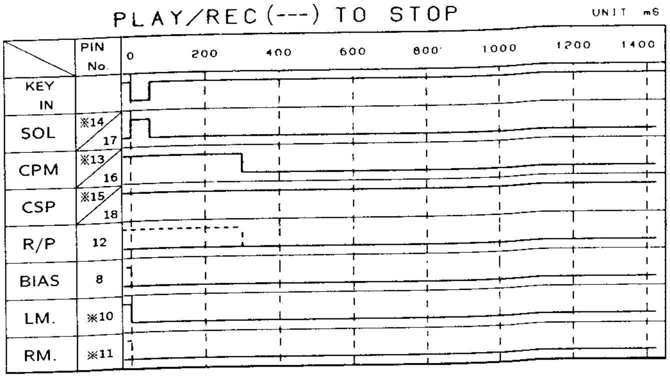
STOP TO FF



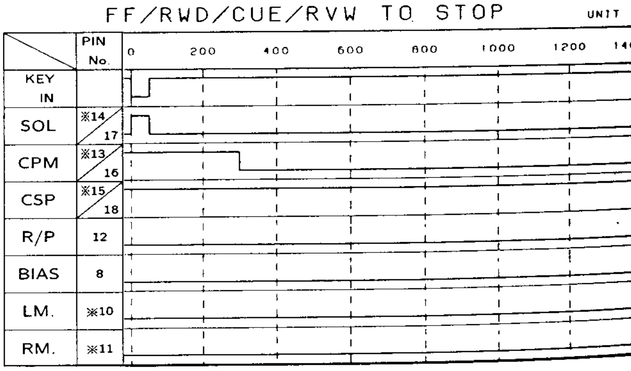
STOP TO RWD



PLAY/REC(---) TO STOP



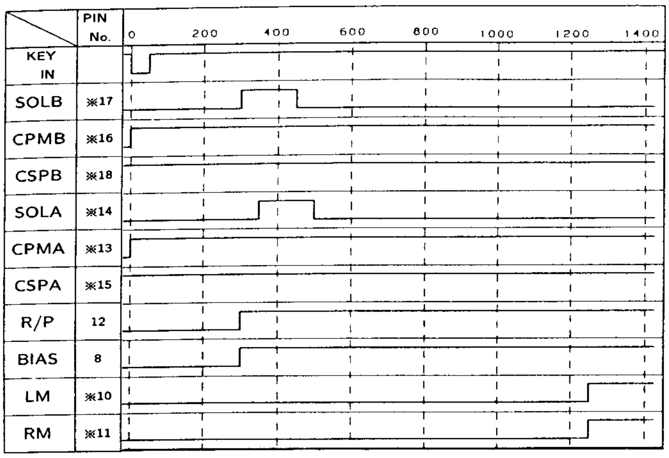
FF/RWD/CUE/RVW TO STOP



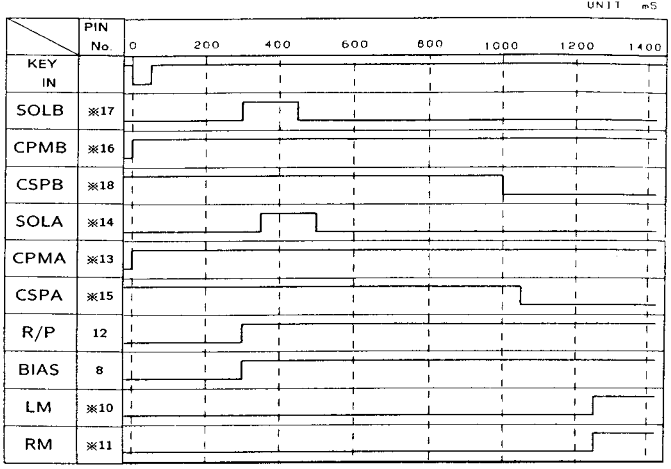
※MSM59371 PIN No.

CIRCUIT DESCRIPTION

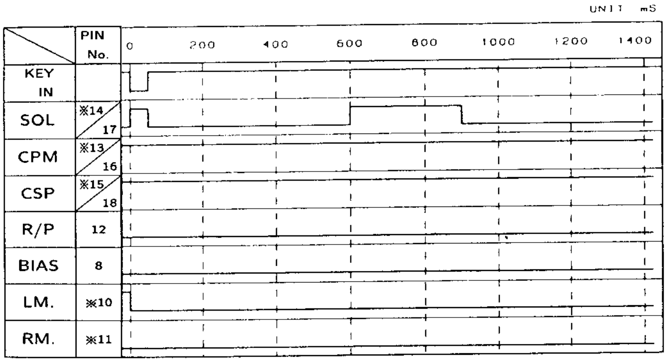
STOP TO NOR DUBBING



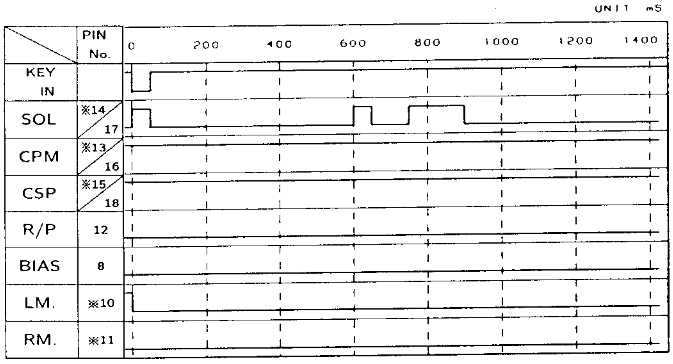
STOP TO HI DUBBING



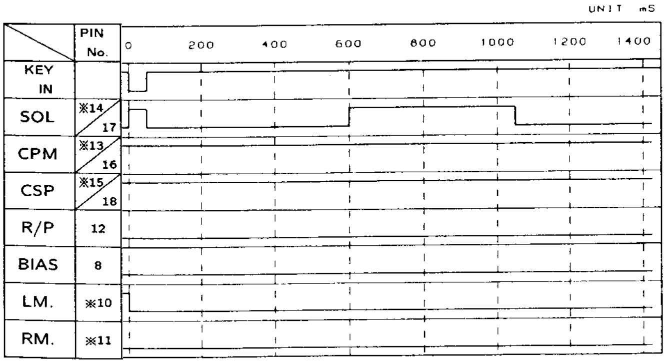
FWD PLAY TO CUE



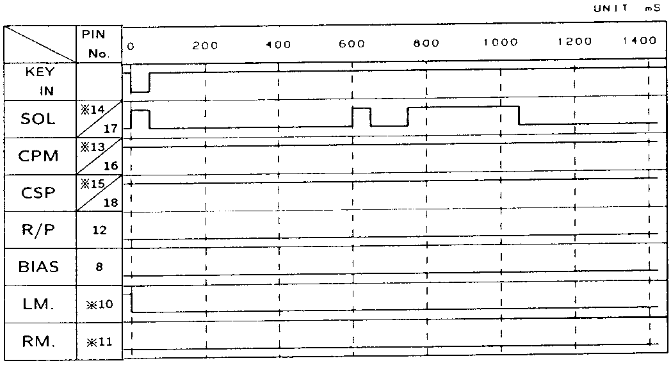
RVS PLAY TO CUE



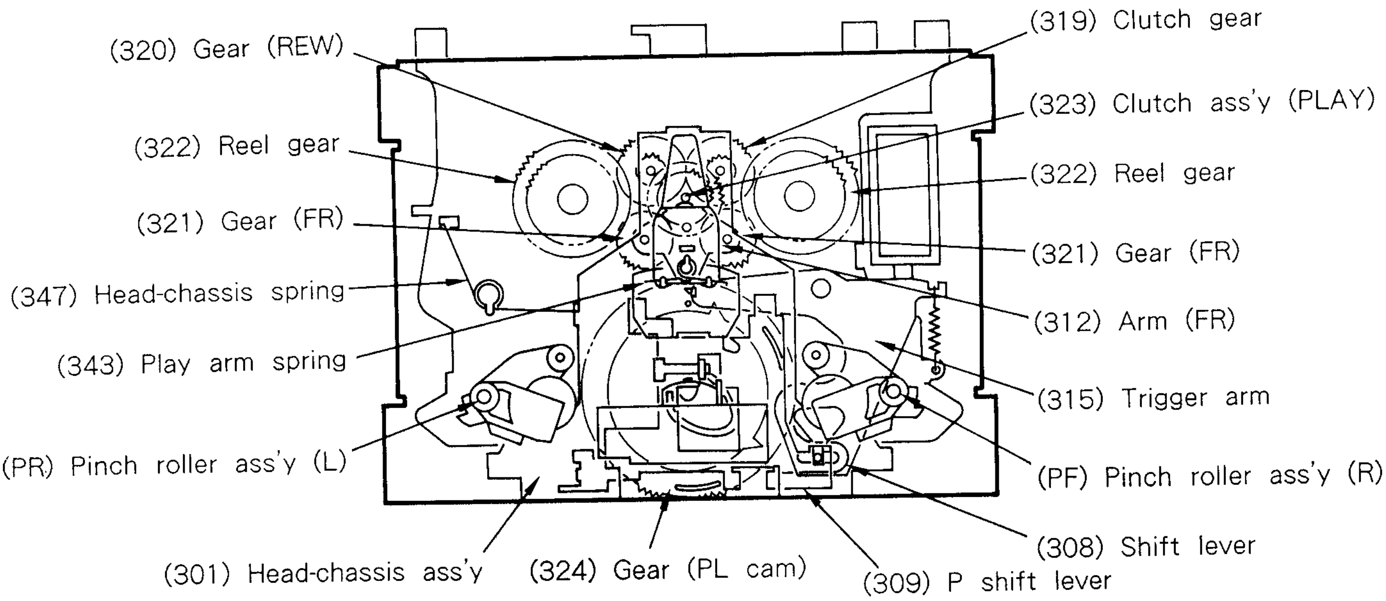
FWD PLAY TO REVEW



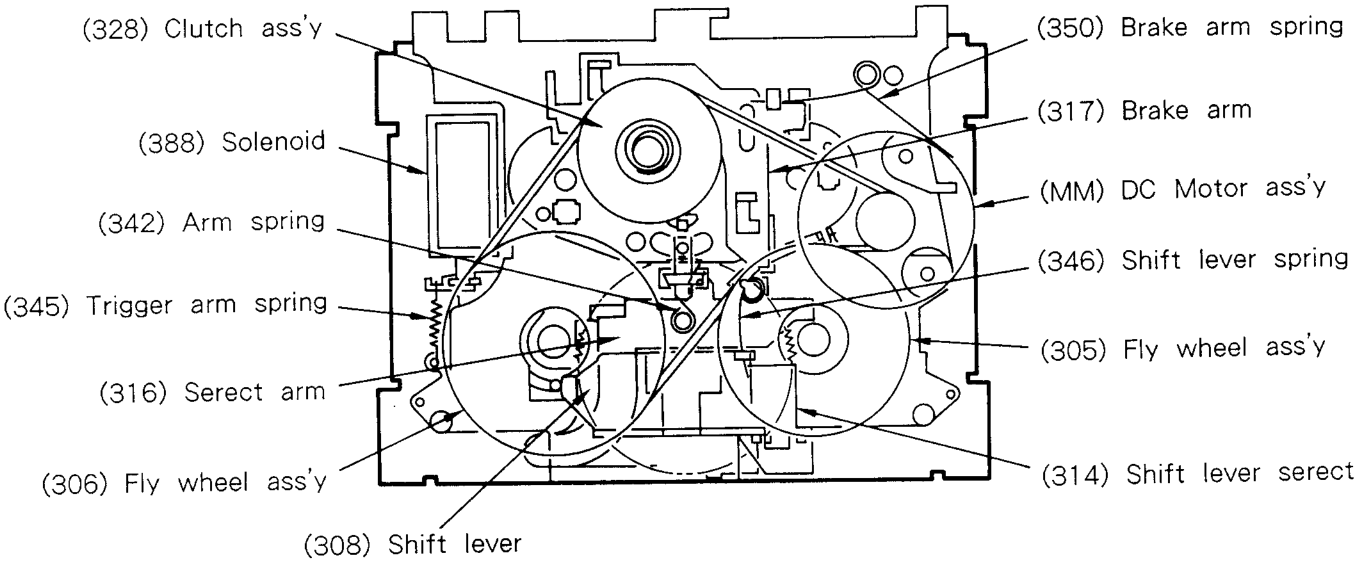
RVS PLAY TO REVEW



MECHANISM DESCRIPTION

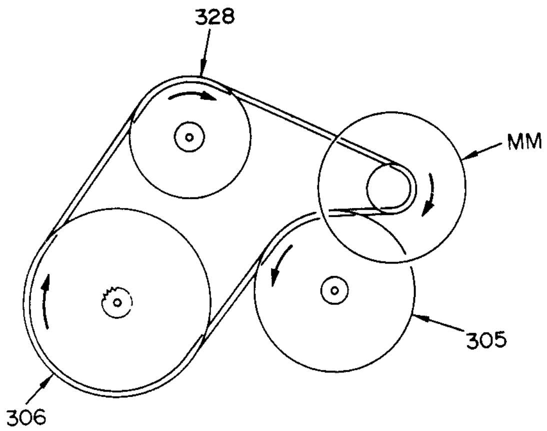

(320) Gear (REW)
(322) Reel gear
(321) Gear (FR)
(347) Head-chassis spring
(343) Play arm spring
(PR) Pinch roller ass'y (L)
(301) Head-chassis ass'y
(324) Gear (PL cam)
(309) P shift lever
(308) Shift lever
(319) Clutch gear
(323) Clutch ass'y (PLAY)
(322) Reel gear
(321) Gear (FR)
(312) Arm (FR)
(315) Trigger arm
(PF) Pinch roller ass'y (R)

Parts Layout (Front perspective)


(328) Clutch ass'y
(388) Solenoid
(342) Arm spring
(345) Trigger arm spring
(316) Serect arm
(306) Fly wheel ass'y
(308) Shift lever
(350) Brake arm spring
(317) Brake arm
(MM) DC Motor ass'y
(346) Shift lever spring
(305) Fly wheel ass'y
(314) Shift lever serect

Parts Layout (Rear perspective)

Driving power	:	130g-cm more
Take up torque	:	35~75g-cm
FF/REW torque	:	70~160g-cm
Back tension torque	:	1.5~6g-cm


328
MM
305
306

Transmission of Rotation

MECHANISM DESCRIPTION

STOP → FWD PLAY / REC (The head is in the forward – transport position when the drive stops.)

1 Press the key.The CPM starts running.

2 After about 300 ms, the solenoid is energized for 150 ms, and the boss Ⓐ of the trigger arm (315) disengages from the stop lever Ⓑ of the play cam gear (314).
Fig. 1

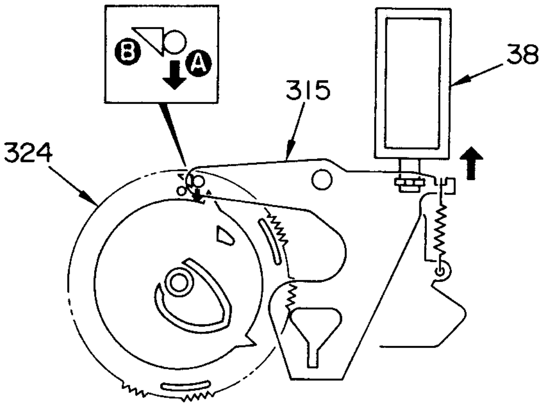


Fig. 1

3 The head chassis assembly (301) is pushed down by the spring (347), so the cam gear (324) rotates slightly, the FW (R) gear engages with the cam gear, and the gears start rotating.
Fig. 2

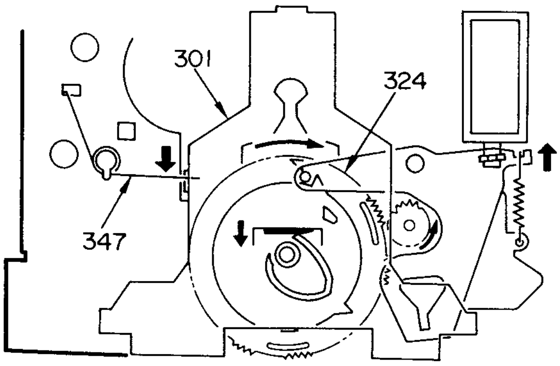


Fig. 2

4 Since the entrance of the inner track of the cam gear (324) passes when the solenoid is energized for 150 ms, the boss Ⓐ of the shift lever selector (314) moves along the outer track, and the P shift lever (309) remains stationary.
Fig. 3

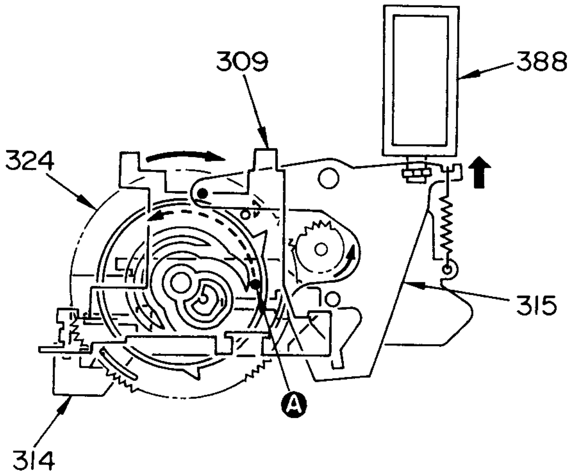


Fig. 3

5 The shift lever is lifted by the cam of the play cam gear, and the head chassis assembly is raised.
Fig. 4

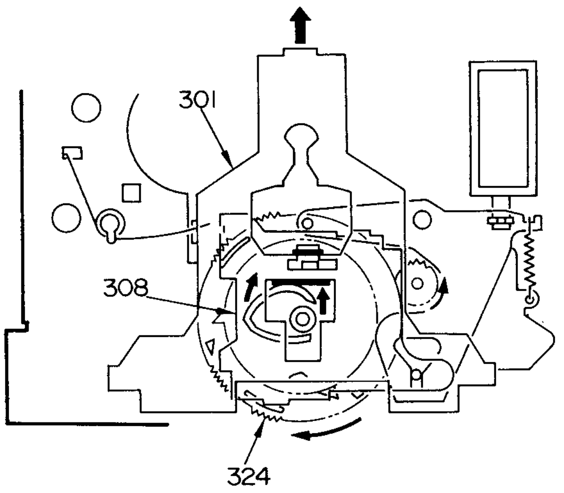


Fig. 4

MECHANISM DESCRIPTION

6 The play arm spring is pushed by the prohection Ⓐ of the P shift lever (309), the play arm tilts along the inner surface of the head chassis, the clutch gear (323), play clutch gear, and hub engage, and the hub starts rotating. Fig. 5

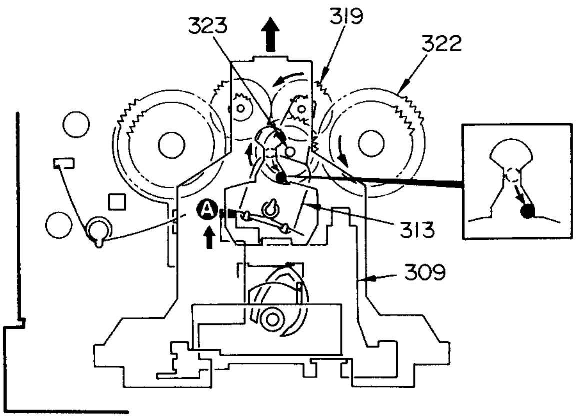


Fig. 5

7 The brake arm (317) is lifted by the bent part Ⓐ of the shift lever (308) to release the brake from the hub.
Fig. 6

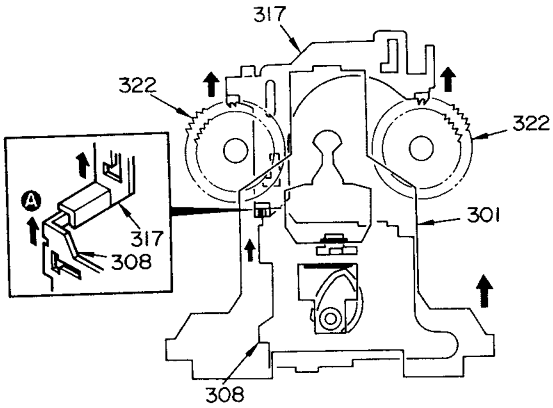


Fig. 6

8 The forward – transport pinch roller (PR) is raised by the bent part Ⓐ of the P shift lever (309), and the pinch roller contacts the capstan.
Fig. 7

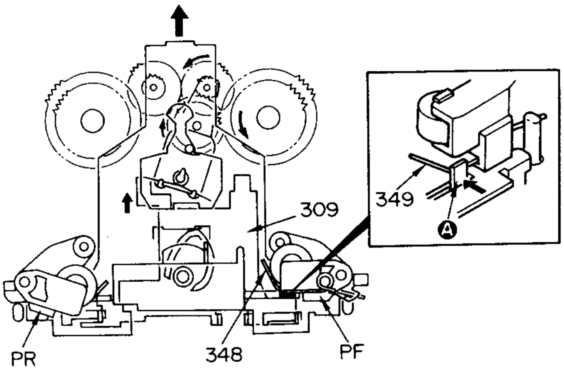


Fig. 7

STOP → RVS PLAY / REC

1 Press the key.

2 After about 300 ms, the solenoid is energized for 50 ms, then deenergized.

3 Since the solenoid is deenergized immediately after the play cam gear starts turning, the boss Ⓐ of the shift lever selector (314), pushed by the trigger arm boss Ⓑ, passes along the inner track of the play cam gear, so the play shift lever also moves, and the head is rotated into the reverse – transport position by the return gear.
Fig. 8

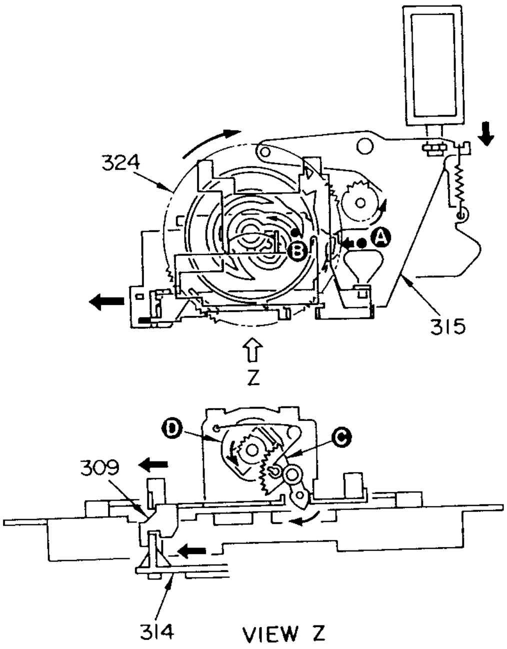


Fig. 8

MECHANISM DESCRIPTION

4 The rotating play cam gear lifts the shift lever (308), raising the head chassis assembly.
Fig. 9

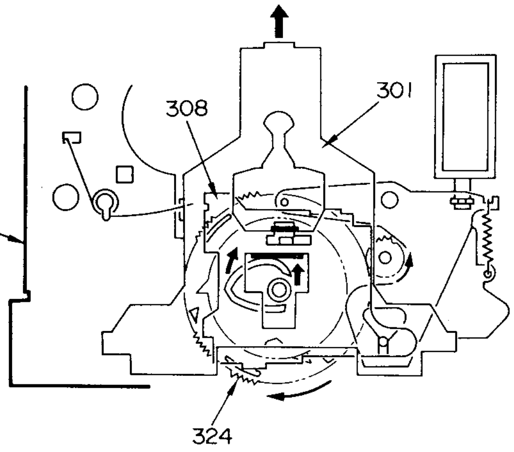


Fig. 9

5 The play arm spring pushed by the projection Ⓐ of the P shift lever (309), the play arm tilts along the inner surface of the head chassis, the REW gear (320), play clutch gear, and hub engage, and the hub starts rotating.
Fig. 10

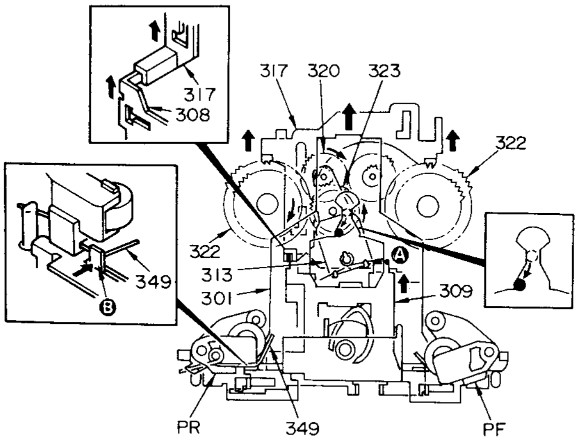


Fig. 10

6 The brake arm (317) is lifted by the shift lever to release the brake from the hub.

7 The spring of the reverse – transport pinch roller (PR) is lifted by the bent part Ⓑ of the P shift lever (309), and the pinch roller contacts the capstan.

STOP → FF

1 Press the ▶▶ key.

2 After 300 ms, the solenoid is energized for 300 ms, the selector arm (316) is held by the concave part of the trigger arm (315), and the head chassis assembly starts rising.
Fig. 11

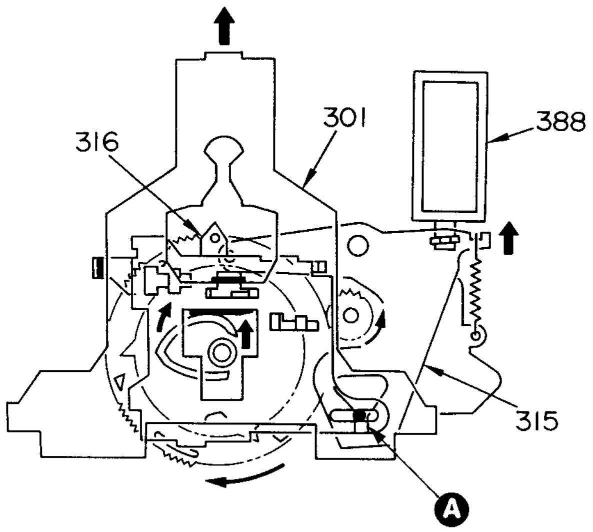


Fig. 11

3 The boss Ⓐ of the selector arm (316) enters the holder on the mechanism base, and is lifted further.
Fig. 12

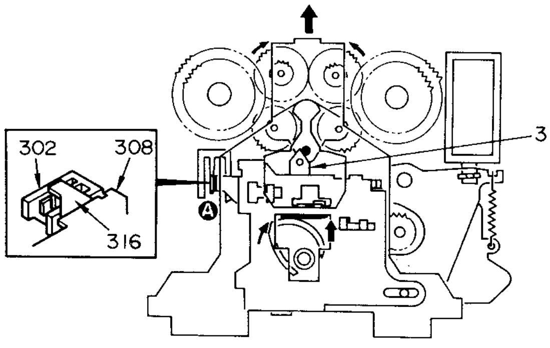


Fig. 12

MECHANISM DESCRIPTION

4 The projection of the selector arm touches the boss Ⓐ of the FR arm (312), the selector arm rises and tilts, the FR gear (321), clutch gear, and hub gear engage, and the forward – transport take – up hub starts rotating.

Fig. 13

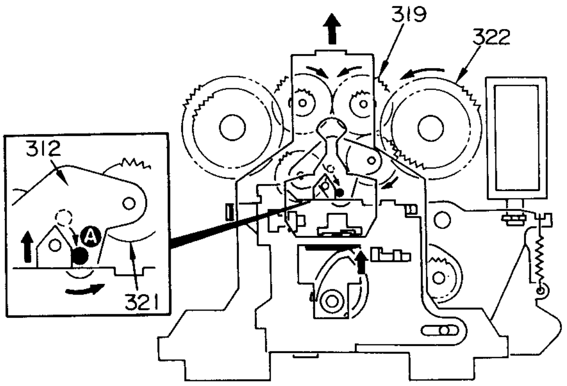


Fig. 13

5 When the shift lever is raised to its limit by the play cam gear cam, the selector arm hole and head chassis assembly boss Ⓐ are positioned as shown in the figure below. The pinch roller does not touch the capstan, and fast – forwarding takes place.

Fig. 14

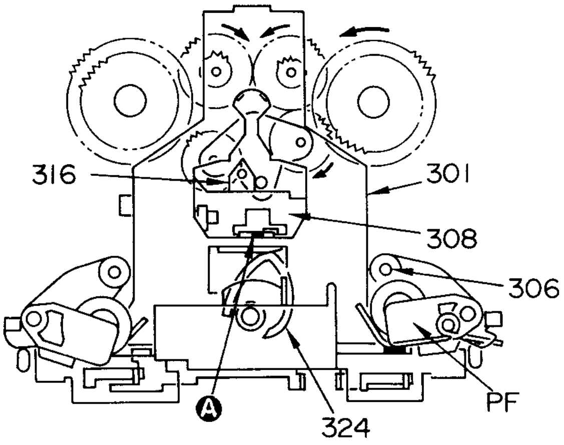


Fig. 14

STOP → RWD

1 Press the ◀◀ key.

2 After 300 ms, the solenoid is energized for 450 ms, the select arm (316) is held by the concave part of the trigger arm, and the head chassis assembly starts rising.

3 Since the selector arm is held, the projection touches the FR arm boss, the FR arm tilts, the FR gear (321), REW gear, and hub gear engage, and the RWD hub starts rotating.

Fig. 15

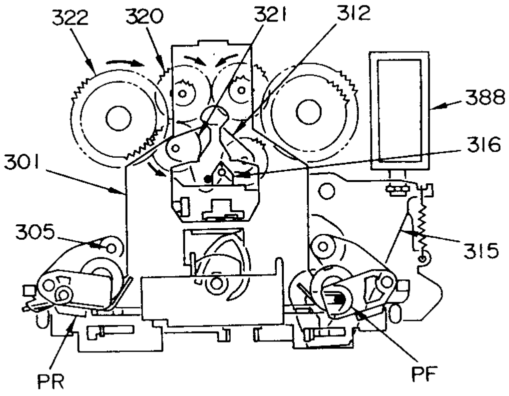


Fig. 15

4 The pinch roller does not touch the capstan, as in the fast forward operation, and rewinding takes place.

F PLAY → CUE / RWD

1 The solenoid is energized for 50 ms during forward play to stop operation.

2 The solenoid is energized for 300 ms to fast – forward (CUE).
The solenoid is energized for 50 ms to rewind (RWD).

R. PLAY → RWD

1 The solenoid is energized for 50 ms during reverse play to stop operation.

2 The solenoid is energized for 50 ms to rotate the head into the reverse – transport position.

3 The solenoid is deenergized for 100 ms, then reenergized for 150 ms to fast – forward.

RVS PLAY → CUE

1 The solenoid is energized for 50 ms during reverse play to stop operation.

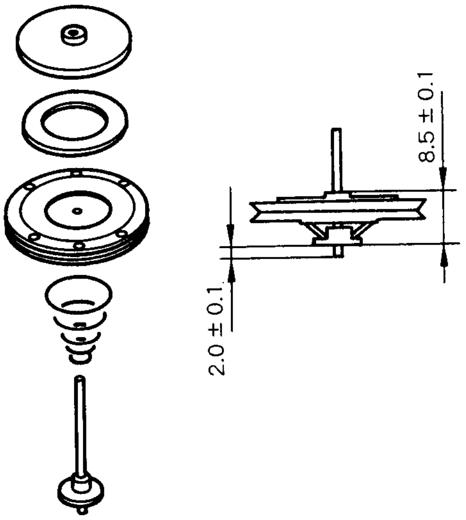
2 The solenoid is energized for 50 ms to rotate the head into the reverse – transport position.

3 The solenoid is deenergized for 100 ms, then reenergizend for 300 ms to rewind.

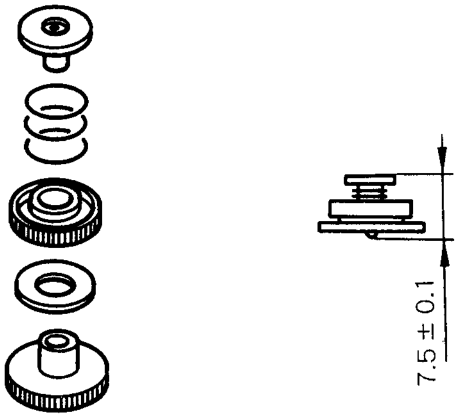
MECHANISM DESCRIPTION

Assembly Procedure

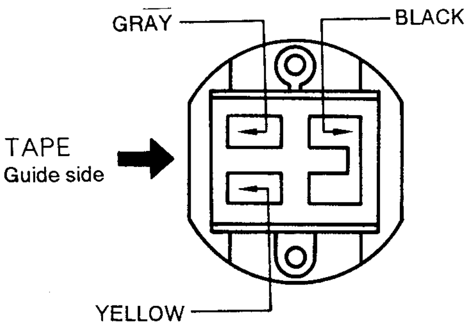
(1) CLUTCH ASS'Y



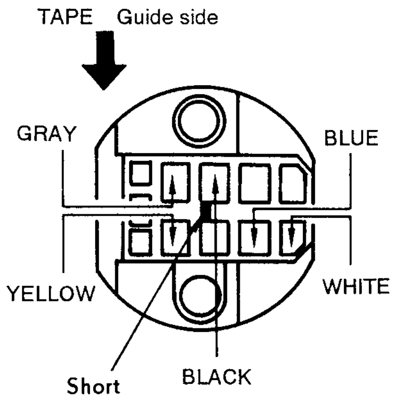
(2) PLAY CLUTCH ASS'Y



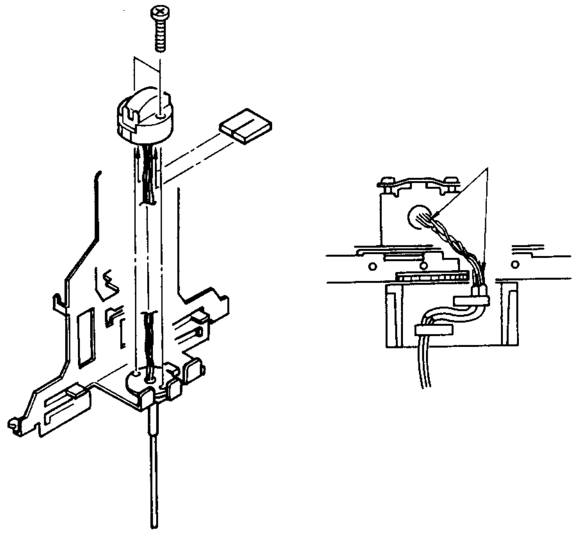
(3)PLAY BACK head lead


GRAY
BLACK
TAPE
Guide side
YELLOW

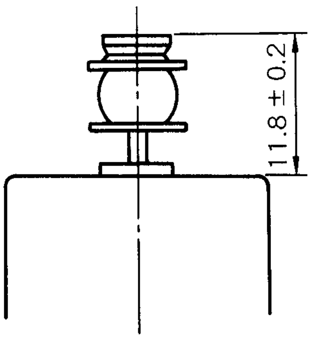
(4) RECORD/PLAY BACK head lead


TAPE
Guide side
GRAY
BLUE
YELLOW
WHITE
Short
BLACK

(5) Head Ass'y



(6) MOTOR PULLY



MECHANISM DESCRIPTION

Assembly procedure

1 Install the brake arm and its spring the clutch arm spring, and the shift lever selector, andits sporing on the mechanism chassis.

Fig. 1

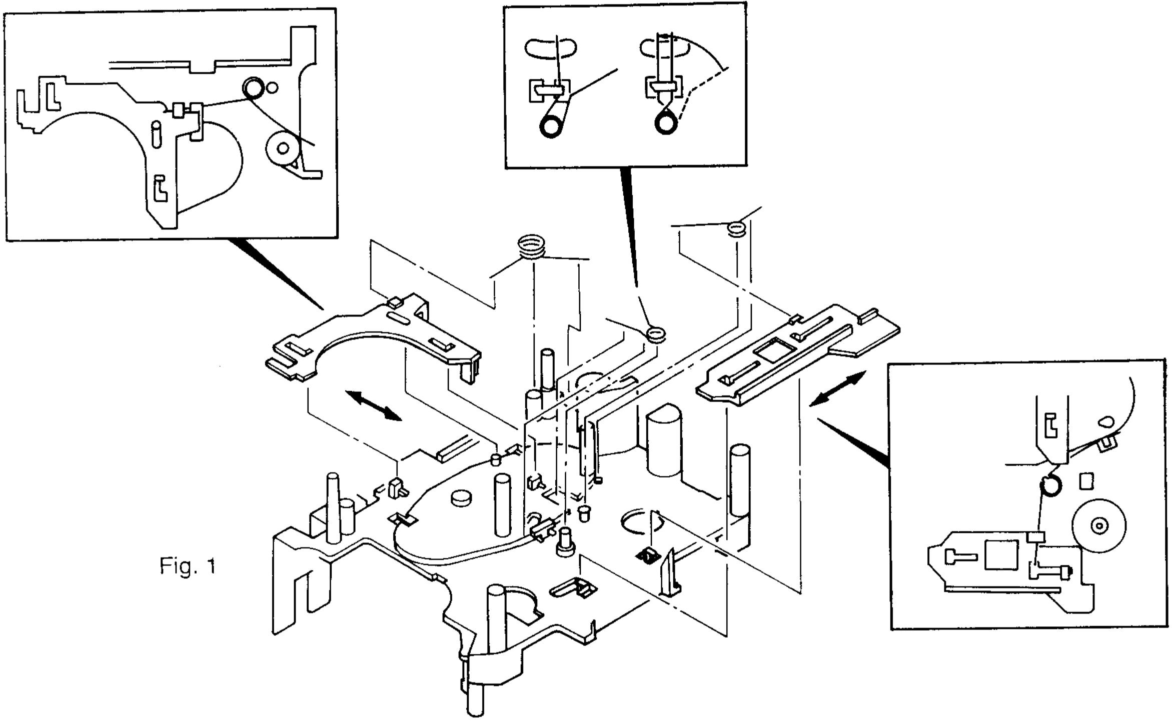
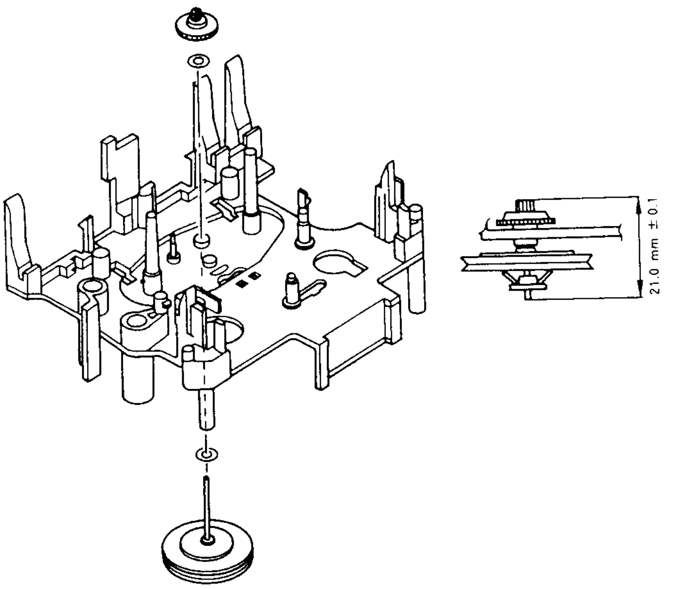


Fig. 1

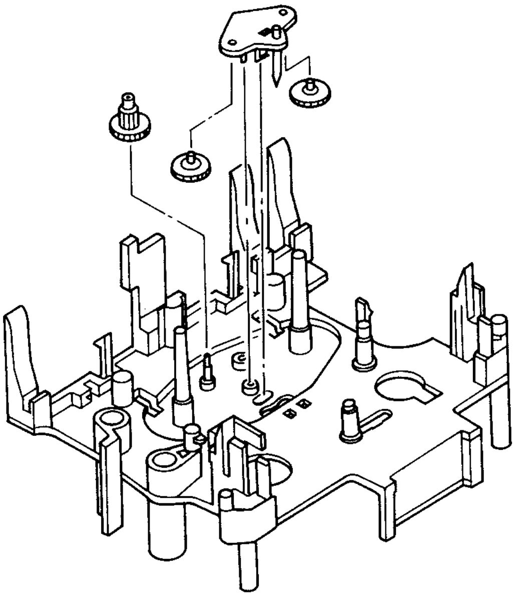
2 Install the clutch assembly on the mechanism chassis.

Fig. 2



3 Install the FR arm, FR gear, and REW gear on the mechanism chassis.

Fig. 3



MECHANISM DESCRIPTION

4 Install the hub assemblies (left and right).
Fig. 4

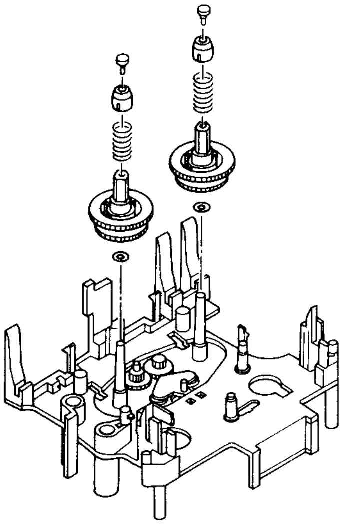


Fig. 4

5 Install the play cam gear and the trigger arm and its spring on the mechanism chassis.
Fig. 5

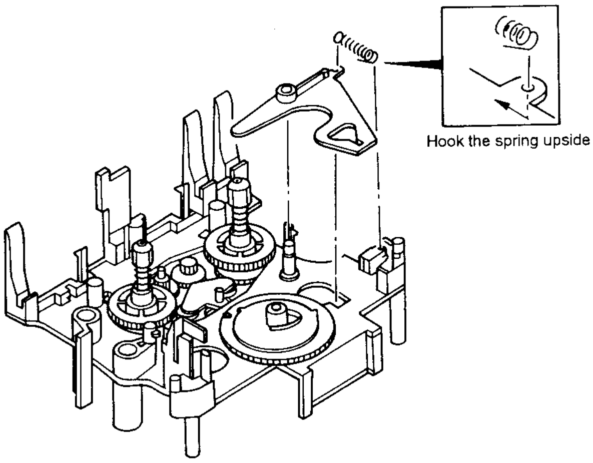


Fig. 5

6 Install the shift assembly and its sporing on the chassis.
Fig. 6

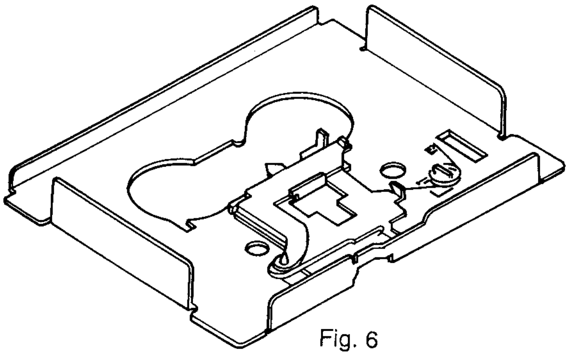


Fig. 6

7 Install the chassis on the mechanism chassis.
Fig. 7

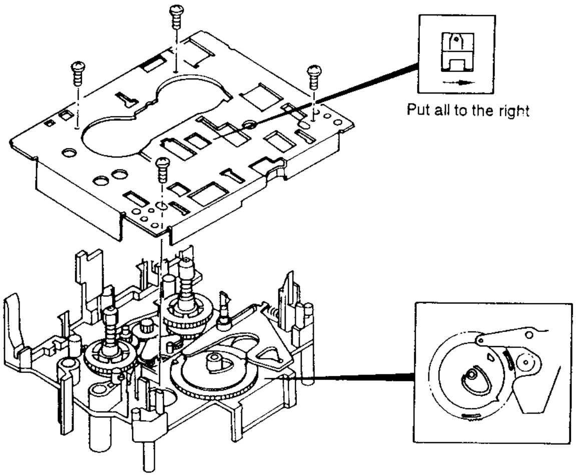


Fig. 7

8 Install the housings (left and right) on the chassis.
Fig. 8

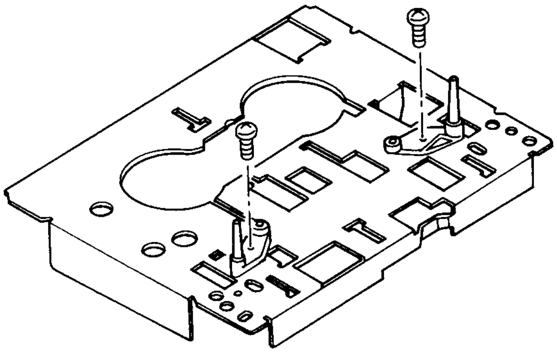


Fig. 8

9 Install the solenoid on the mechnism chassis.
Fig. 9

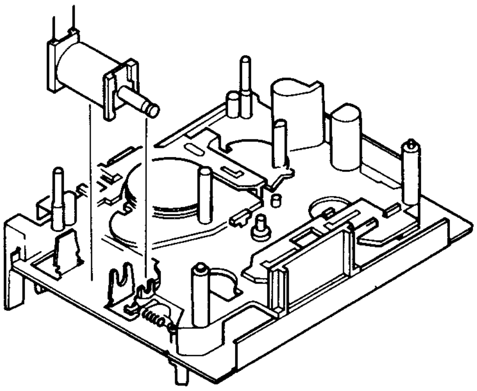


Fig. 9

10 Install the flywheels (left and right).

MECHANISM DESCRIPTION

11 Install the play arm, play clutch assembly, and the head chassis and its spring on the chassis, and install the cassette guide.

Fig. 10

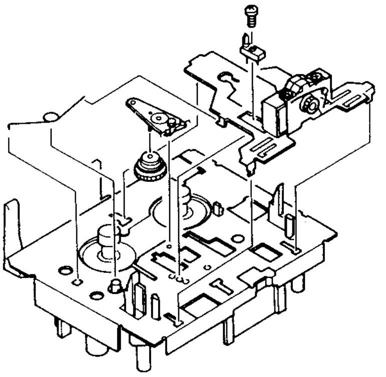


Fig. 10

12 Install the pinch rollers (left and right).

Fig. 11

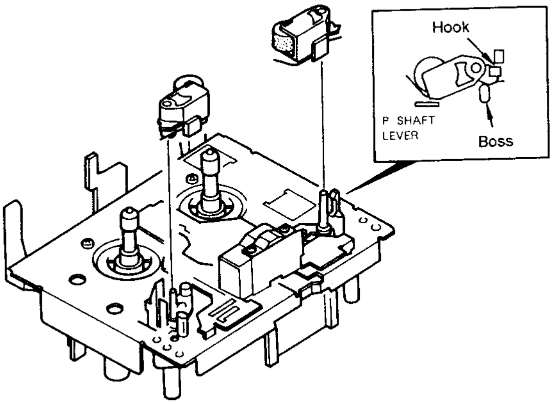


Fig. 11

13 Install the interlock and its spring.

Fig. 12

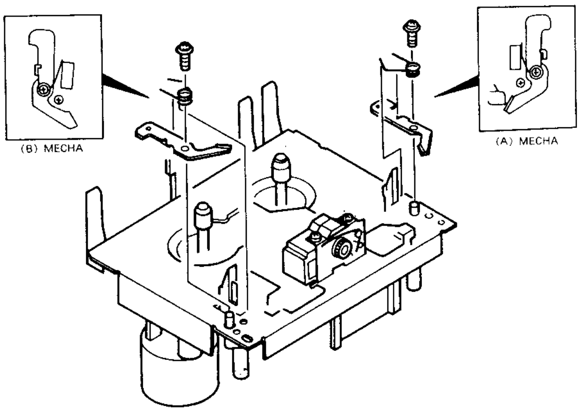


Fig. 12

14 Install the belt temporarily

Fig. 13

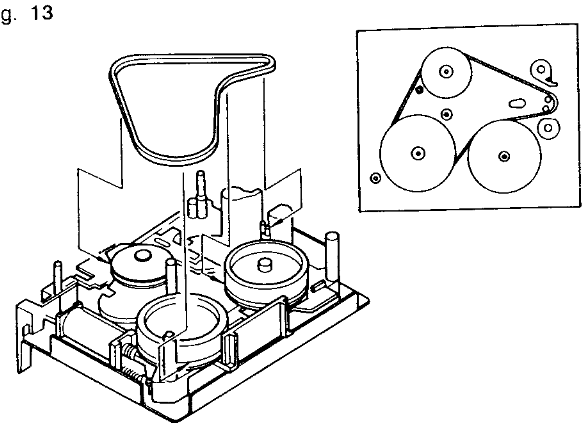


Fig. 13

15 Install the PCB.

16 Install the CPM and belt.

ADJUSTMENT

Order	Item	Input setting	Output setting	Deck setting	Adjustment points	Adjustment method	Fig.
Unless otherwise specified, set the respective switches as follows: 0 dBs=0.775 V							
I. Cassette mechanism section (R/P head adjustment)							
[1]	Degaussing and cleaning	—	—	Power: OFF, Degaussing Cleaning Play	Recording head, Erase head, Capstan, Pinch roller (Decks A and B)	Degauss R/P head by head eraser. Clean R/P head, erase head, capstan, pinch roller by a cotton swab soaked with alcohol.	
[2]	R/P head azimuth	TCC-153, SCC-1727 MTT-114 10 kHz, −10 dB	(B)	PLAY	Azimuth adjustment screw (Decks A and B) (FWD, RVS)	Maximize the output and adjust so that Lissajous pattern on oscilloscope nears a line slanted 45°.	(a)
II. Mechanism adjustment **(X28-238)**							
<1>	Tape speed (double speed)	TCC-110, SCC-1727 MTT-111 3 kHz	(B)	**Connect R229(A) and R230(B) to GND. Play or TEST 1 MODE.**	**Deck A : VR5** **Deck B : VR6**	Adjust so that frequency is 6 kHz at tape center.	
<2>	Tape speed (normal speed)	TCC-110, SCC-1727 MTT-111 3 kHz	(B)	Play	**Deck A : VR7** **Deck B : VR8**	Adjust so that frequency is 3 kHz at tape center.	
III. Printed board adjustment **(X28-238)**							
<1>	Playback level	MTT-150 400 Hz (200nWb)	(B)	PLAY	**Deck A : VR1(L) VR2(R)** **Deck B : VR3(L) VR4(R)**	Adjust so that playback output is −3.5 dB	
		MTT-256, SCC-1727 315 Hz (160nWb)				Adjust so that playback output is −6.0 dB	
		MTT-256U, TCC-160 315 Hz (250nWb)				Adjust so that playback output is −2.5 dB	
<2>	Bias current	(A) 1 kHz, −30 dBs 10 kHz, −30 dBs	(B)	Adjust the electronic volume control so that recording monitor output is −2 dBs at 1 kHz, and record and playback 1 kHz and 10 kHz alternately.	**X-45** **Deck B : VR11(L) VR12(R)** **X-85** **Deck B : VR9(L) VR10(R)**	Record 1 kHz and 10 kHz alternately, and adjust so that playback level is identical between them.	

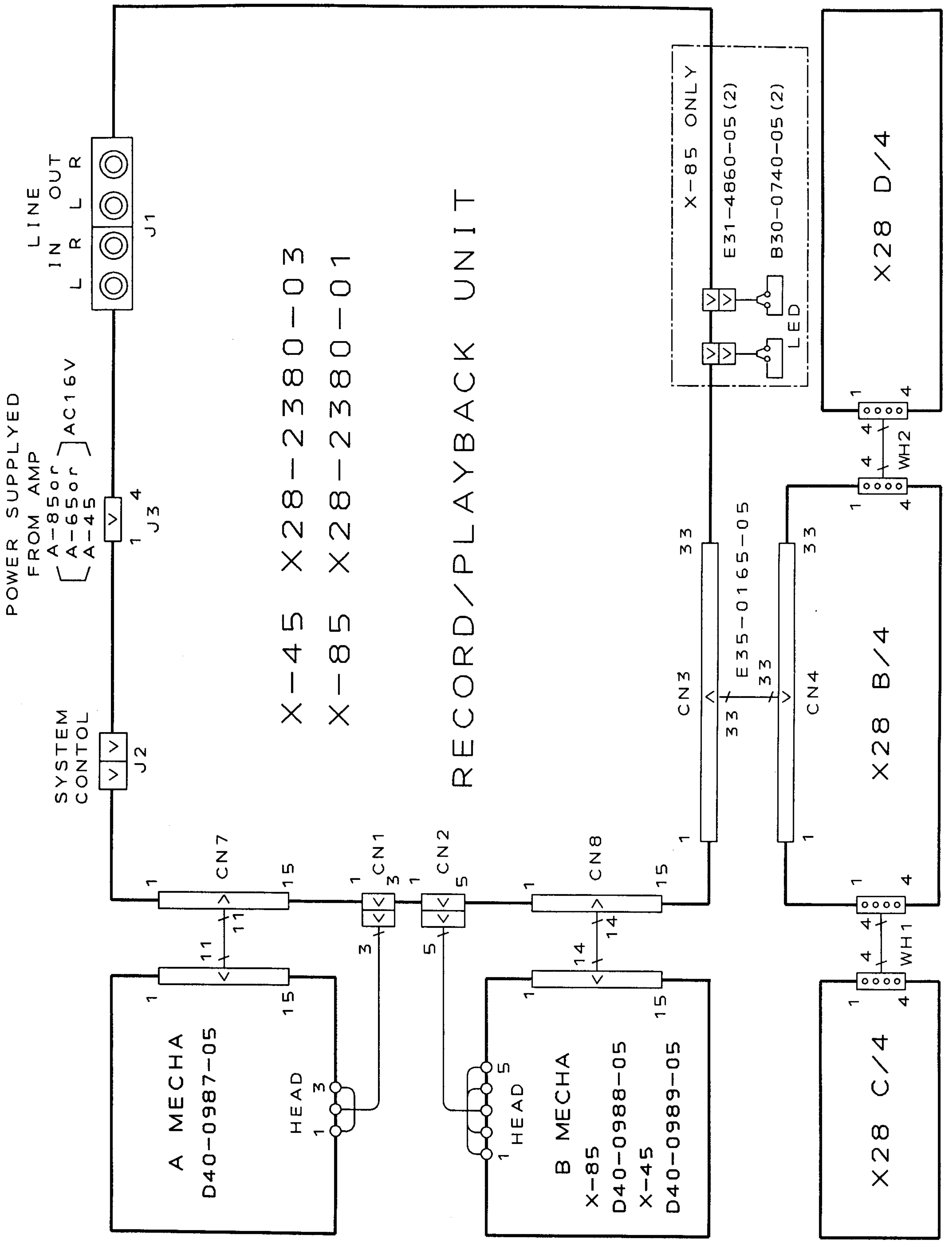
REGLAGE

Ordre	Sujet	Réglage d'entrée	Réglage de sortie	Réglage de platine	Points d'ajustement	Méthode d'ajustement	Figure
Sauf indication contraire, régler les commutateurs respectifs comme suit: I. Section de mécanisme de cassette (ajustement de tête E/L)							0 dBs=0,775 V
[1]	Démagnétisation et nettoyage	—	—	Alimentation: OFF, démagnétisation, nettoyage, lecture	Tête d'enregistrement, tête d'effacement, cabestan, galet presseur (platines A et B)	Démagnétiser la tête E/L avec un démagnétiseur de tête. Nettoyer la tête E/L, la tête d'effacement, le cabestan, le galet presseur avec un coton-tige imbibé d'alcool.	
[2]	Azimut de tête E/L	TCC-153, SCC-1727 MTT-114 10 kHz, −10 dB	(B)	PLAY	Vis d'ajustement de l'azimut (platines A et B) (FWD, RVS)	Maximiser la sortie et ajuster pour que la forme Lissajous sur l'oscilloscope soit proche d'une ligne inclinée à 45°.	(a)
II. Ajustement de mécanisme **(X28-238)**							
<1>	Vitesse de bande (vitesse double)	TCC-110, SCC-1727 MTT-111 3 kHz	(B)	**Connecter R229(A) et R230(B) à GND. Lire/※TEST 1.**	**Platine A : VR5 Platine B : VR6**	Ajuster pour que la fréquence soit 6 kHz au centre de bande.	
<2>	Vitesse de bande (vitesse normale)	TCC-110, SCC-1727 MTT-111 3 kHz	(B)	Lire	**Platine A : VR7 Platine B : VR8**	Ajuster pour que la fréquence soit 3 kHz au centre de bande.	
III. Ajustement de plaquette imprimée **(X28-238)**							
<1>	Niveau de lecture	MTT-150 400 Hz (200nWb)	(B)	PLAY	Platine A: VR1 (G), VR2 (D) Platine B: VR3 (G), VR4 (D)	Ajuster pour que la sortie de lecture soit −3,5 dB.	
		MTT-256, SCC-1727 315 Hz (160nWb)				Ajuster pour que la sortie de lecture soit −6,0 dB.	
		MTT-256U, TCC-160 315 Hz (250nWb)				Ajuster pour que la sortie de lecture soit −2,5 dB.	
<2>	Courant de polarisation	(A) 1 kHz, −30 dBs 10 kHz, −30 dBs	(B)	Ajuster la commande de volume électronique pour que la sortie de contrôle d'enregistrement soit de −2 dBs à 1 kHz et l'enregistrement et la lecture 1 kHz et 10 kHz alternativement.	**X-45 Platine B : VR11(L)VR12(R) X-85 Platine B : VR9(L)VR10(R)**	Enregistrer 1 kHz et 10 kHz alternativement et ajuster pour que le niveau de lecture soit identique entre eux.	

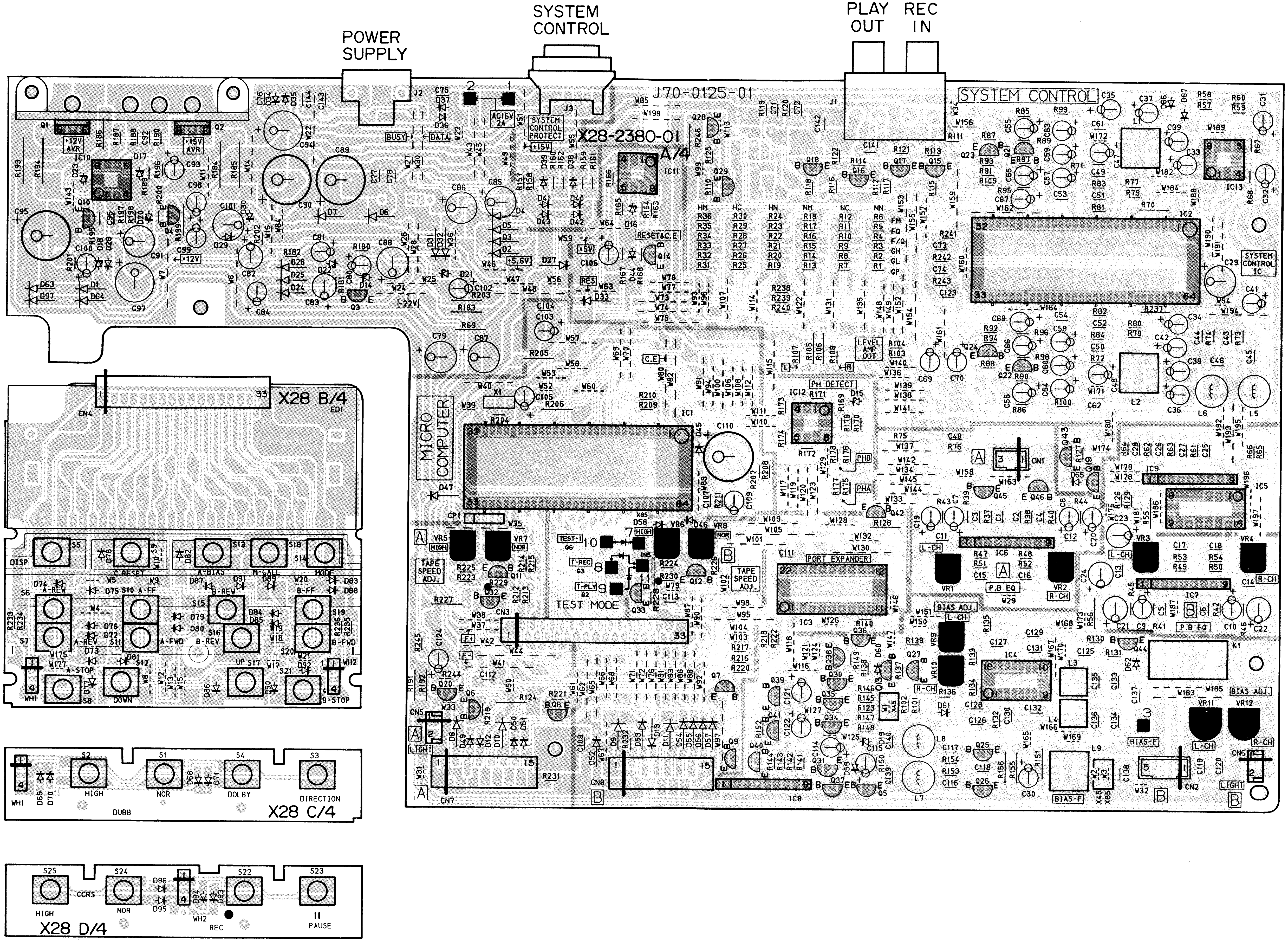
ABGLEICH

Reihenfolge	Gegenstand	Eingangs-Einstellung	Ausgangs-Einstellung	Deck-Einstellung	Abgleichpunkte	Abgleichmethode	Abbildung
Wenn nicht anders angegeben, die einzelnen Schalter wie folgt einstellen:							0 dBs=0,775 V
I. Kassetten-Mechanismus (A/W-Kopf-Einstellung)							
[1]	Entmagnetisierung und Reinigung	—	—	Spannungsversorgung: OFF, Entmagnetisierung, Reinigung, Wiedergabe	A/W-Kopf, Löschkopf, Tonwelle, Andruckrolle (Deck A und B)	A/W-Kopf mit Tonkopf-Entmagnetisierer entmagnetisieren. A/W-Kopf, Löschkopf, Tonwelle, Andruckrolle mit einem leicht mit Alkohol befeuchteten Wattebausch reinigen.	
[2]	A/W-Kopf-Azimuth	TCC-153, SCC-1727 MTT-114 10 kHz, −10 dB	(B)	PLAY	Azimuth-Einstellschraube (Deck A und B) (FWD, RVS)	Den Ausgang maximieren und so einstellen, daß die Lissajous-Figur auf dem Oszilloskop einer um 45° geneigten Geraden angenähert wird.	(a)
II. Mechanismus-Abgleichung **(X28-238)**							
<1>	Bandgeschwindigkeit (doppelte Geschwindigkeit)	TCC-110, SCC-1727 MTT-111 3 kHz	(B)	**R230(B) und R229(A) mit GND verbinden.** **Wiedergabe** **※TEST 1.**	**Deck A : VR5** **Deck B : VR6**	So einstellen, daß die Frequenz in der Bandmitte 6 kHz beträgt	
<2>	Bandgeschwindigkeit (normale Geschwindigkeit)	TCC-110, SCC-1727 MTT-111 3 kHz	(B)	Wiedergabe	**Deck A : VR7** **Deck B : VR8**	So einstellen, daß die Frequenz in der Bandmitte 3 kHz beträgt.	
III. Abgleich der Leiterplatine **(X28-238)**							
<1>	Wiedergabepegel	MTT-150 400 Hz (200nWb)	(B)	PLAY	Deck A: VR1 (L), VR2 (R) Deck B: VR3 (L), VR4 (R)	So einstellen, daß der Wiedergabe-Ausgang −3,5 dB beträgt.	
		MTT-256, SCC-1727 315 Hz (160nWb)				So einstellen, daß der Wiedergabe-Ausgang −6,0 dB beträgt.	
		MTT-256U, TCC-160 315 Hz (250nWb)				So einstellen, daß der Wiedergabe-Ausgang −2,5 dB beträgt.	
<2>	Vormagnetisierungsstrom	(A) 1 kHz, −30 dBs 10 kHz, −30 dBs	(B)	Den elektronischen Lautstärkeregler so einstellen, daß der Aufnahmeüberwachungs-Ausgang −2 dBs bei 1 kHz beträgt, und danach abwechselnd signal von 1 kHz und 10 kHz aufnehmen und wiedergeben.	**X-45** **Deck B : VR11(L) VR12(R)** **X-85** **Deck B : VR9(L) VR10(R)**	1 kHz und 10 kHz abwechselnd aufnehmen und so einstellen, daß der Wiedergabepegel in beiden Fällen gleich ist.	

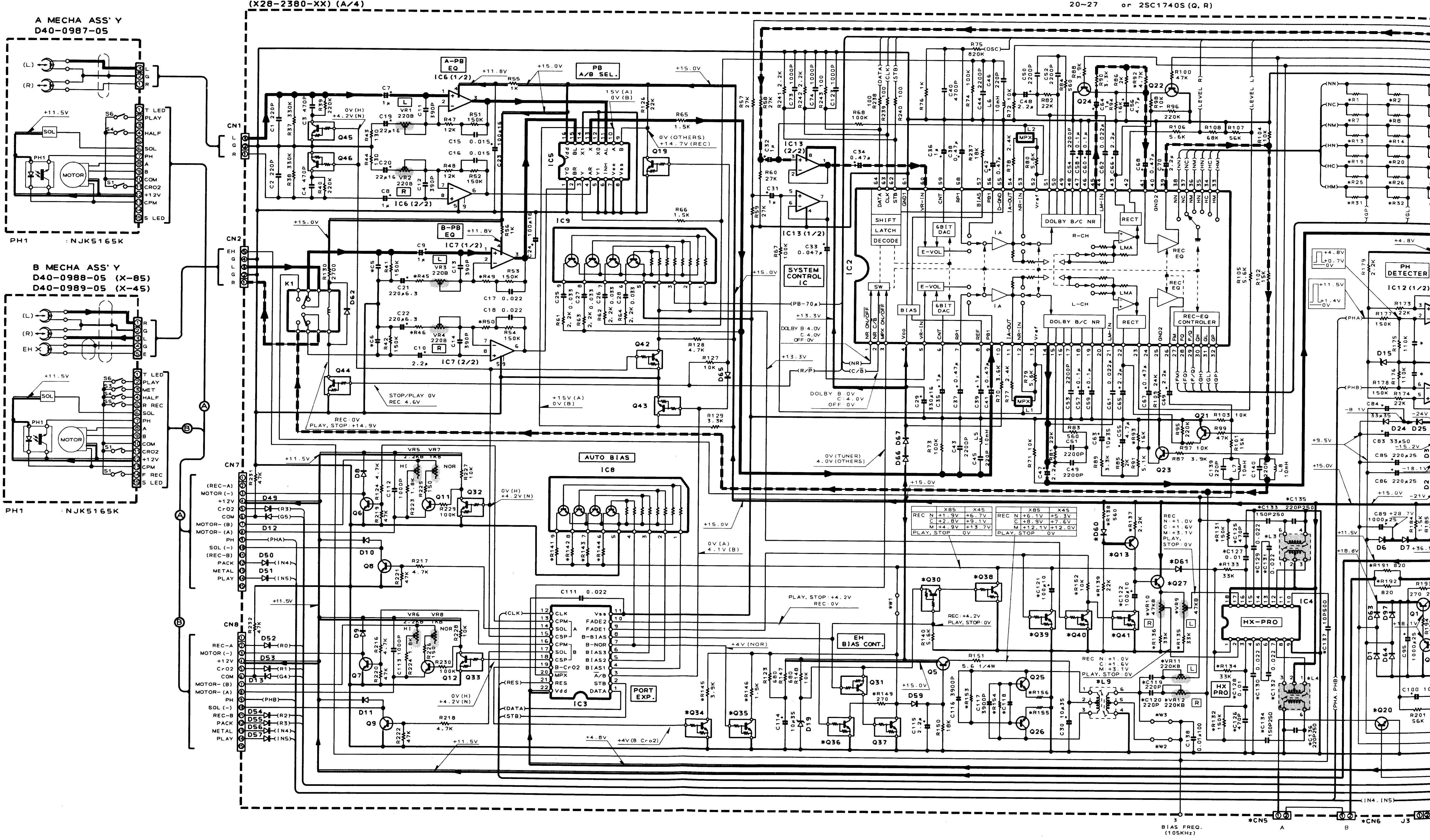
WIRING DIAGRAM


LINE
IN
L
R
OUT
L
R
J1
POWER SUPPLYED FROM AMP
A-85 or
A-65 or
A-45
AC16V
J3
1
4
SYSTEM CONTOL
J2
X-45 X28-2380-03
X-85 X28-2380-01
RECORD/PLAYBACK UNIT
X-85 ONLY
E31-4860-05(2)
B30-0740-05(2)
LED
X28 D/4
1
4
WH2
4
4
1
4
33
CN3
E35-0165-05
33
33
33
CN4
33
1
1
X28 B/4
1
4
WH1
4
4
1
4
X28 C/4
CN7
1
15
11
11
1
15
CN1
1
3
3
CN2
1
5
5
CN8
1
15
14
14
1
15
A MECHA
D40-0987-05
HEAD
3
1
B MECHA
X-85
D40-0988-05
X-45
D40-0989-05
HEAD
5
1

PC BOARD (Component side view)


POWER SUPPLY
SYSTEM CONTROL
PLAY OUT
REC IN
J70-0125-01
X28-2380-01
A/4
SYSTEM CONTROL
SYSTEM CONTROL IC
SYSTEM CONTROL PROTECT
AC16V 2A
BUSY
DATA
+12V AVR
+15V AVR
RESET&C.E
MICRO COMPUTER
PH DETECT
LEVEL AMP OUT
PORT EXPANDER
TAPE SPEED ADJ.
TEST MODE
T-REC
T-PLY
TEST-I
BIAS ADJ.
P.B EQ
L-CH
R-CH
BIAS-F
LIGHT
X28 B/4
DISP
C.RESET
A-BIAS
M-CALL
MODE
A-REW
A-FF
B-REW
B-FF
A-REV
A-FWD
B-REV
B-FWD
A-STOP
DOWN
UP
B-STOP
X28 C/4
HIGH
NOR
DOLBY
DIRECTION
DUBB
X28 D/4
CCRS
REC
II PAUSE

IC1 : M50945-103SP
IC2 : HA12157NT
IC3 : MSM59371
IC4 : μPC1297CA
IC5 : XRU40528 or TC40528P
IC6, 7 : TA8125S
IC8, 9 : TD62554S
IC10 : RC4565D or NJM4565D
IC11, 12 : BA10393
IC13 : RC4565D-D or NJM4565D-D
Q1 : 2SB941
Q2 : 2SD1266
Q3, 10 : 2SA999
Q4, 5 : 2SC3940A
Q6~9 : 2SC3246
Q11~13 : 2SA1309A (Q, R) or 2SA933S (Q, R)
Q14~18 20~27 : 2SC3311A (Q, R) or 2SC1740S (Q, R)
Q28~31 : UN4112 or DTA124ES
Q19, 32~46 : UN4212 or DTC124ES
D1~11,
64, 97
D12, 13
D14~16


(X28-2380-XX) (A/4)
A MECHA ASS'Y
D40-0987-05
PH1 : NJK5165K
B MECHA ASS'Y
D40-0988-05 (X-85)
D40-0989-05 (X-45)
PH1 : NJK5165K
SOL
MOTOR
CN1
CN2
CN7
CN8
A-PB EQ
IC6 (1/2)
IC6 (2/2)
B-PB EQ
IC7 (1/2)
IC7 (2/2)
PB A/B SEL.
IC5
IC9
AUTO BIAS
IC8
IC3
PORT EXP.
EH BIAS CONT.
SYSTEM CONTROL IC
IC2
IC13 (2/2)
IC13 (1/2)
SHIFT
LATCH
DECODE
E-VOL
6BIT DAC
SW
BIAS
DOLBY B/C NR
RECT
LMA
REC EQ
REC-EQ CONTROLER
R-CH
L-CH
HX-PRO
IC4
PH DETECTER
IC12 (1/2)
X85 | X45
REC N +1.9V +6.7V
C +2.8V +9.1V
M +4.9V +13.7V
PLAY, STOP 0V
X85 | X45
REC N +6.1V +5.3V
C +8.9V +7.6V
M +12.1V +12.0V
PLAY, STOP 0V
STOP/PLAY 0V
REC 4.6V
REC 0V
PLAY, STOP +14.9V
DOLBY B 4.0V
C 4.0V
OFF 0V
0V (TUNER)
4.0V (OTHERS)
PLAY, STOP +4.2V
REC 0V
BIAS FREQ. (105KHz)
*CN5
*CN6
J3
(IN4, IN5)

CAUTION: For continued safety, replace safety critical com
nents only with manufacturer's recommended parts (refe
parts list). ⚠ Indicates safety critical components. To reduce
risk of electric shock, leakage-current or resistance measureme
shall be carried out (exposed parts are acceptably insulated f
the supply circuit) before the appliance is returned to the cust
er.

J40528
TC40528P
3125S
52554S

IC10 : RC4565D or NJM4565D
IC11, 12 : BA10393
IC13 : RC4565D-D or NJM4565D-D

Q1 : 2SB941
Q2 : 2SD1266
Q3, 10 : 2SA999
Q4, 5 : 2SC3940A

Q6~9 : 2SC3246
Q11~13 : 2SA1309A (Q, R) or 2SA933S (Q, R)
Q14~18, 20~27 : 2SC3311A (Q, R) or 2SC1740S (Q, R)

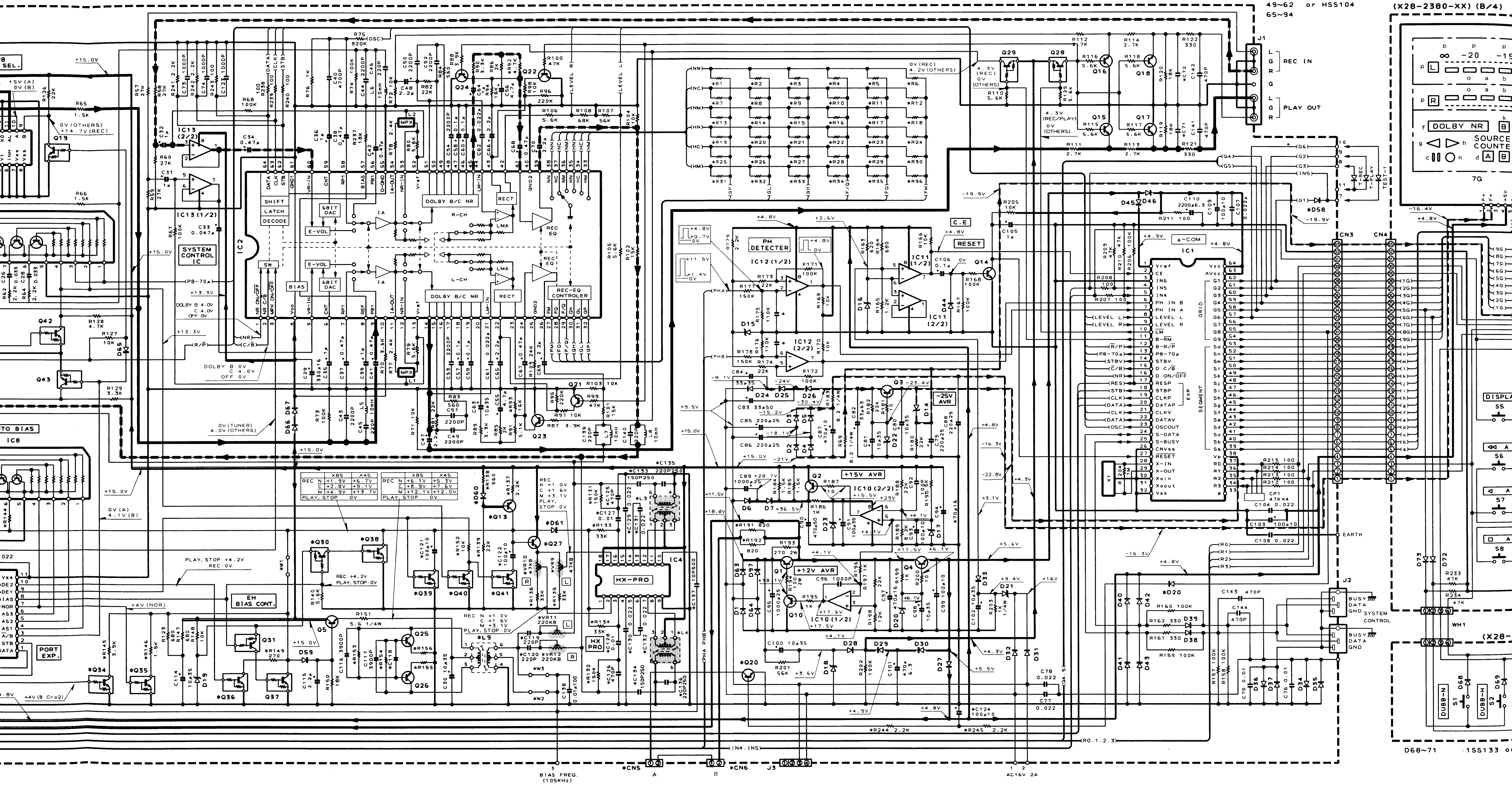
Q28~31 : UN4112 or DTA124ES
Q19, 32~46 : UN4212 or DTC124ES

D1~11, 63, 64, 97 : 1SR139-100 or S56888
D12, 13 : R87210
D14~16 : RD2.7ES (B2) or HZS2.7N (B2)

D17 : RD3.9ES (B2) or HZS3.9N (B2)
D18, 19 : RD4.7ES (B) or HZS4.7N (B)

D20 : RD6.2ES (B2) or HZS6.2N (B2)
D21 : RD8.2ES (B2) or HZS8.2N (B2)

D22 : RD24ES (B) or HZS24N (B)
D23 : RD30ES (B) or HZS30N (B)
D24~47, 49~62, 65~94 : 1SS133 or HSS104



(X28-2380-XX) (B/4)
IC13 (2/2)
IC13 (1/2)
IC2
SYSTEM CONTROL IC
SHIFT
LATCH
DECODE
E-VOL
6BIT DAC
DOLBY B/C NR
R-CH
L-CH
RECT
LMA
REC EQ
REC-EQ CONTROLER
BIAS
SW
IC8
TO BIAS
IC4
HX-PRO
EH BIAS CONT.
PORT EXP.
PH DETECTER
IC12 (1/2)
IC12 (2/2)
IC11 (1/2)
IC11 (2/2)
C.E
RESET
-25V AVR
+15V AVR
IC10 (2/2)
IC10 (1/2)
+12V AVR
μ-COM
IC1
GRID
SEGMENT
EXP
J1
REC IN
PLAY OUT
J2
BUSY DATA GND
SYSTEM CONTROL
WH1
CN3
CN4
CN5
CN6
J3
EARTH
BIAS FREQ. (105KHz)
AC16V 2A
DOLBY NR
SOURCE COUNTER
DISPLAY
DUBB-N
DUBB-H
7G
D68~71 : 1SS133
(X28-

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

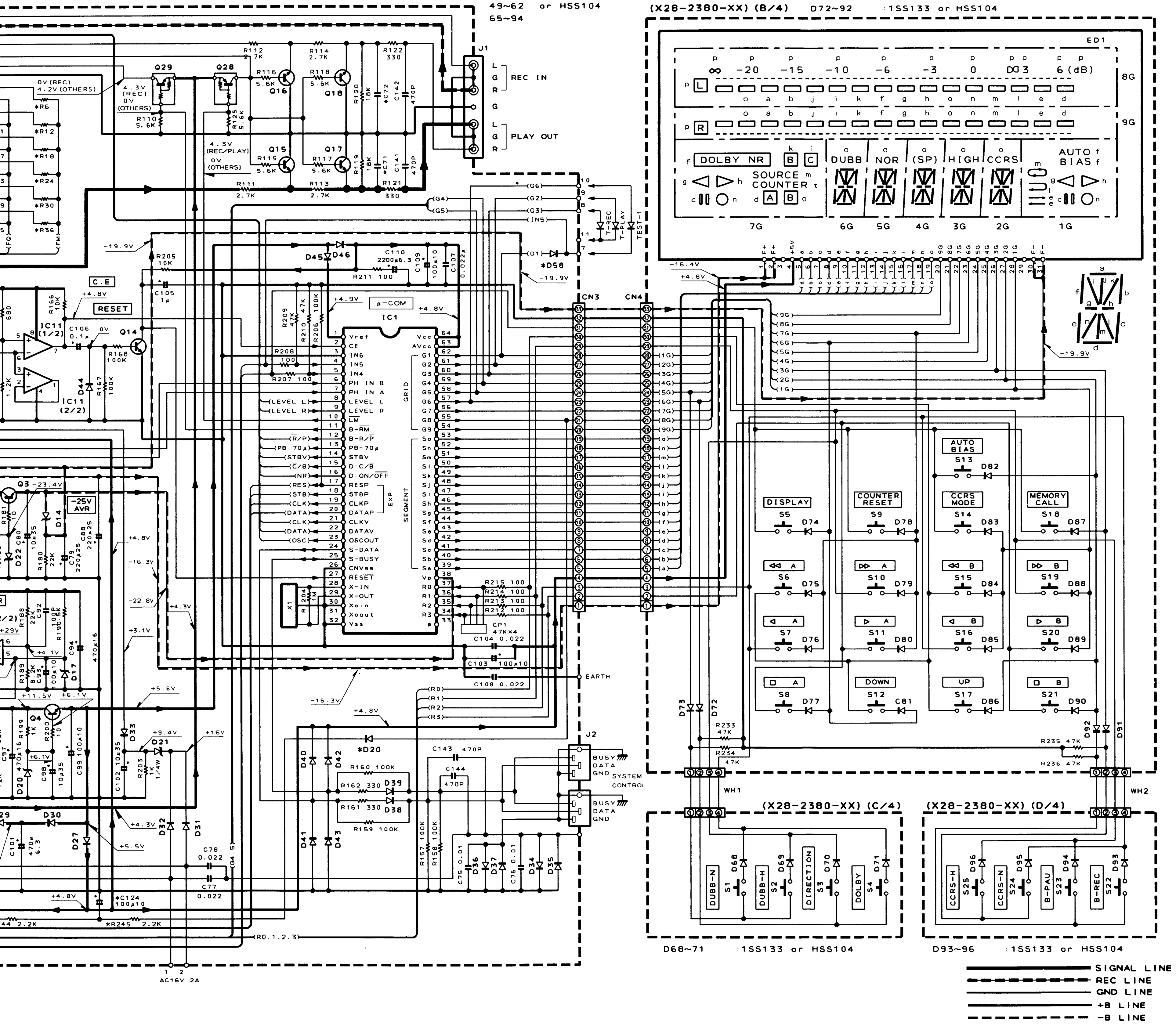
DC voltages are as measured with a high impedance voltmeter with a cassette loaded at playback mode. Values may vary slightly due to variations between individual instruments or/and units. Bias circuit DC voltages are as measured while in the record mode.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance, une cassette étant insérée en mode du lecture. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Les tensions c.c. du circuit de polarité doivent être mesurées, l'appareil étant en mode d'enregistrement.

Die angegebenen Gleichspannungswerte wurden bei eingesetzter Cassette in der Wiedergabe mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig. Die angegebenen Gleichspannungswerte der Vormagnetisierungsschaltung wurden in der Aufnahme-Betriebsart gemessen.

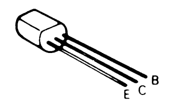
D17 : RD3.9ES(B2) or HZS3.9N(B2)
D18, 19 : RD4.7ES(B) or HZS4.7N(B)
D20 : RD6.2ES(B2) or HZS6.2N(B2)
D21 : RD8.2ES(B2) or HZS8.2N(B2)
D22 : RD24ES(B) or HZS24N(B)
D23 : RD30ES(B) or HZS30N(B)
D24~47, 49~62, 65~94 : 1SS133 or HSS104



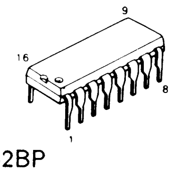
B2)
(X28-2380-XX) (B/4)
D72~92 : 1SS133 or HSS104
J1
REC IN
PLAY OUT
ED1
IC1
μ-COM
IC11 (1/2)
IC11 (2/2)
C.E
RESET
-25V AVR
CN3
CN4
J2
BUSY DATA GND
SYSTEM CONTROL
EARTH
DISPLAY
COUNTER RESET
AUTO BIAS
CCRS MODE
MEMORY CALL
DOWN
UP
WH1
WH2
(X28-2380-XX) (C/4)
(X28-2380-XX) (D/4)
DUBB-N
DUBB-H
DIRECTION
DOLBY
CCRS-H
CCRS-N
B-PAU
B-REC
D68~71 : 1SS133 or HSS104
D93~96 : 1SS133 or HSS104
AC16V 2A
SIGNAL LINE
REC LINE
GND LINE
+B LINE
-B LINE

DESTINATION		UNIT NAME	
COUNTRY	ABB.	X-45	X-85
ENGLAND	T	X28-2380-03	X28-2380-01
EUROPE	E	X28-2380-03	X28-2380-01
AUSTRALIA	X	X28-2380-03	X28-2380-01
GENERAL MARKET	M	X28-2380-03	X28-2380-01

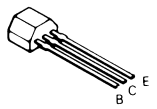
REF.	X-45	X-85	ADDRESS
IC4	NO	YES	I-6
Q13, 27	NO	YES	J-6
Q20	NO	YES	I-5
Q30	NO	YES	Q-5
Q34~36	NO	YES	F.G-7
Q38~41	NO	YES	H.I-6
D20	NO	YES	M-6
D58	NO	YES	N-3
D60, 61	NO	YES	M.I-5
C5	560P	1000P	C-3
C6	560P	680P	C-4
C71.72	820P	470P	M-2
C118	6800P	0.01μ	H-6
C119, 120	YES	NO	H-6
C121, 122	NO	YES	I-6
C124	NO	YES	L-7
C123~137	NO	YES	I-6
R1	100K	43K	J-2
R2	68K	100K	
R3	43K	62K	
R4	62K	47K	K-2
R5	43K	56K	
R6	220K	220K	
R7	180K	220K	J-2
R8	130K	100K	
R9	91K	150K	
R10	62K	47K	K-2
R11	43K	56K	
R12	220K	220K	
R13	75K	120K	J-3
R14	120K	150K	
R15	110K	130K	
R16	33K	68K	K-3
R17	68K	33K	
R18	220K	220K	
R19	82K	27K	J-3
R20	62K	91K	
R21	43K	47K	
R22	39K	12K	K-2
R23	27K	56K	
R24	100K	100K	
R25	82K	100K	J-3
R26	91K	160K	
R27	82K	100K	
R28	27K	12K	K-2
R29	39K	56K	
R30	100K	100K	
R31	150K	33K	J-3
R32	130K	160K	
R33	91K	110K	
R34	18K	12K	K-2
R35	33K	56K	
R36	100K	100K	
R45, 46	68	47	D-4
R49, 50	6.8K	6.2K	D-4
R92	6.2K	4.7K	H-2
R93	15K	16K	H-4
R131~134	NO	YES	I-5
R135~139	NO	YES	H-5
R141	12K	82K	E-5
R142	5.1K	39K	
R143	2.4K	22K	
R144	2.2K	27K	
R145, 146	NO	YES	F-6
R149	NO	YES	J-6
R152	NO	YES	H-5
R153, 154	15K	27K	J-6
R155, 156	3.3 1/4W	5.6 1/4W	H-6
R191, 192	NO	YES	J-5
R244, 245	NO	YES	L-7
CN5, 6	NO	YES	J-7
L3, 4	NO	YES	I-6
L9	L32-0536-05	L32-0388-05	H-6
VR9, 10	NO	YES	I-6
VR11, 12	YES	NO	
W1, 2	YES	NO	
W3	NO	YES	I-7



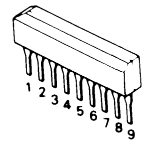
2SA999
2SC3246
2SC3940A



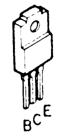
TC4052BP



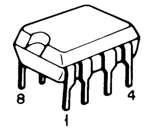
DTA124ES
DTC124ES
UN4112
2SA933S
2SC1740S



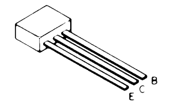
TA8125S
TD62554S



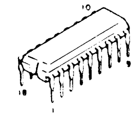
2SD2061



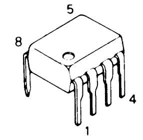
BA10393
RC4565D
RC4565D-D



UN4212
2SA1309A
2SC3311A



UP1297CA



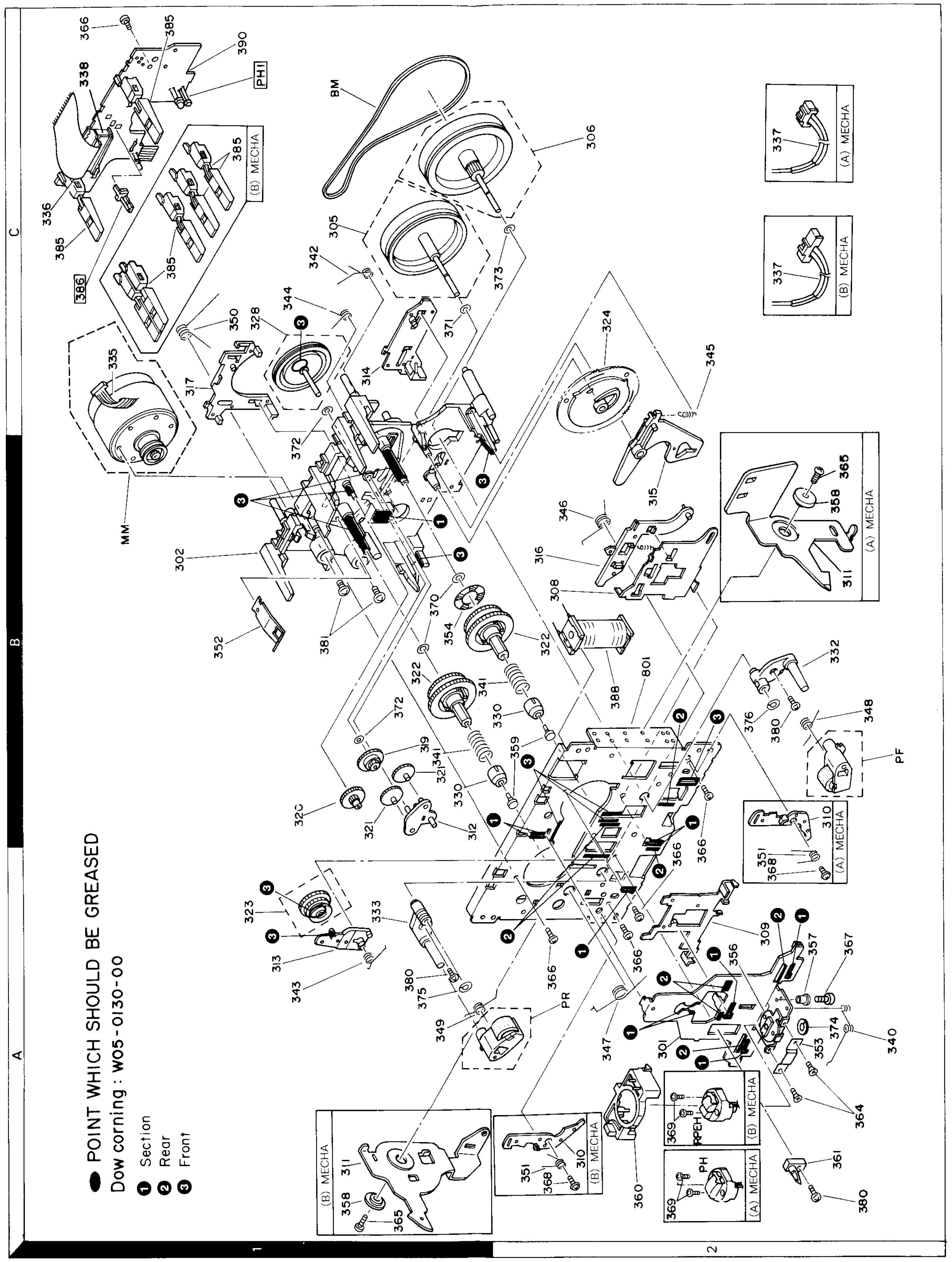
NJM4565D
NJM4565D-D

X-45/85

KENWOOD

Y26-3330-21

EXPLODED VIEW (MECHANISM UNIT)


● POINT WHICH SHOULD BE GREASED
Dow corning : W05-0130-00
❶ Section
❷ Rear
❸ Front
(A) MECHA
(B) MECHA
MM
BM
PHI
PF
PR
PH
RPEH
A
B
C
1
2
301
302
305
306
308
309
310
311
312
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314
315
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317
320
321
322
323
324
328
330
332
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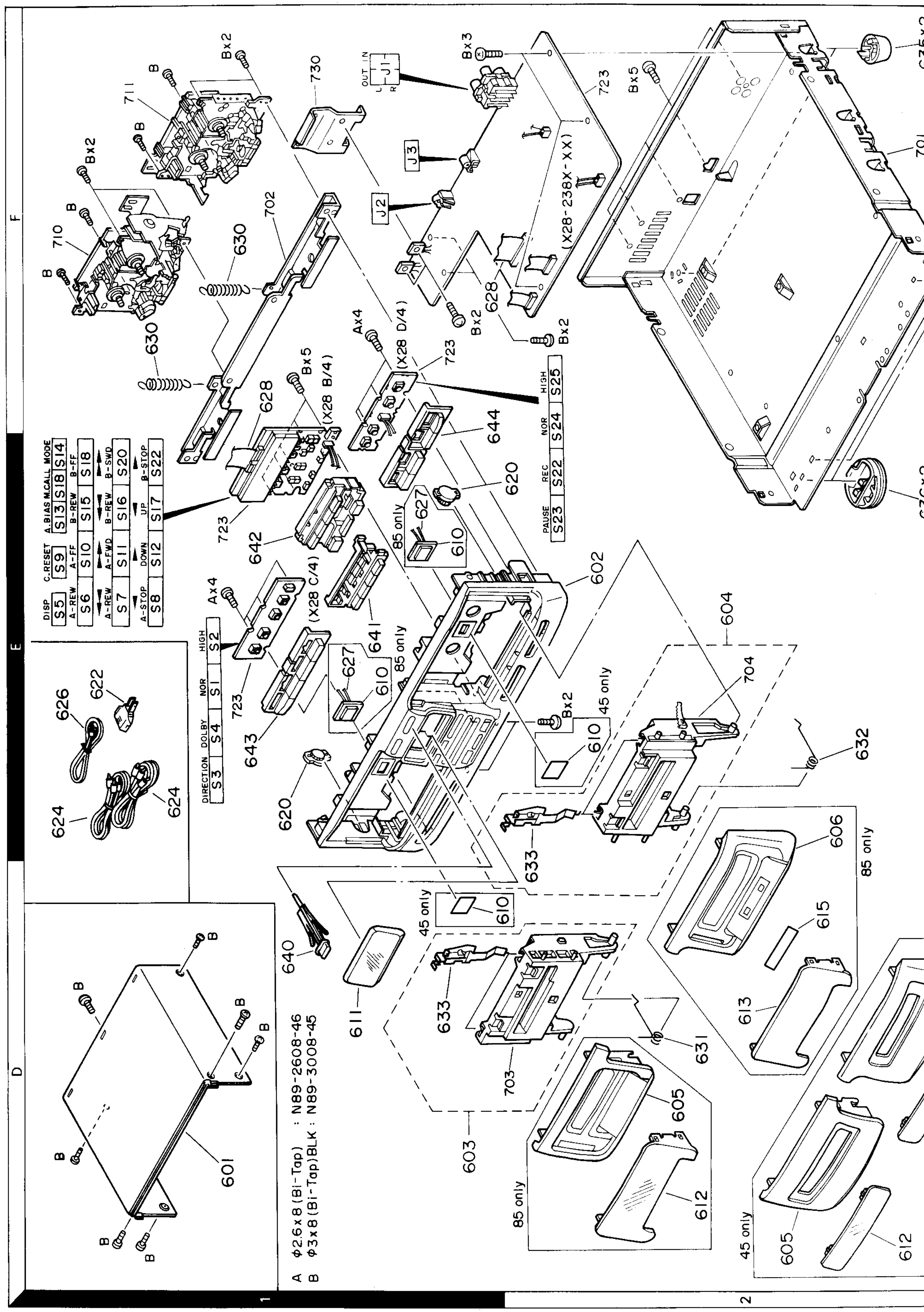
801

EXPLODED VIEW (UNIT)


A φ2.6x8 (Bi-Tap) : N89-2608-46
B φ3x8 (Bi-Tap)BLK : N89-3008-45
DISP S5
C-RESET S9
A-BIAS S13
M.CALL S18
MODE S14
A-REW S6
A-FF S10
B-REW S15
B-FF S18
A-REW S7
A-FWD S11
B-REW S16
B-SWD S20
A-STOP S8
DOWN S12
UP S17
B-STOP S22
PAUSE S23
REC S22
NOR S24
HIGH S25
DIRECTION S3
DOLBY S4
NOR S1
HIGH S2
OUT IN
L R
J1
J2
J3
(X28-238X-XX)
(X28 D/4)
(X28 B/4)
(X28 C/4)
Ax4
Bx2
Bx3
Bx5
B
45 only
85 only
D
E
F
1
2
601
602
603
604
605
606
610
611
612
613
615
620
622
624
626
627
628
630
631
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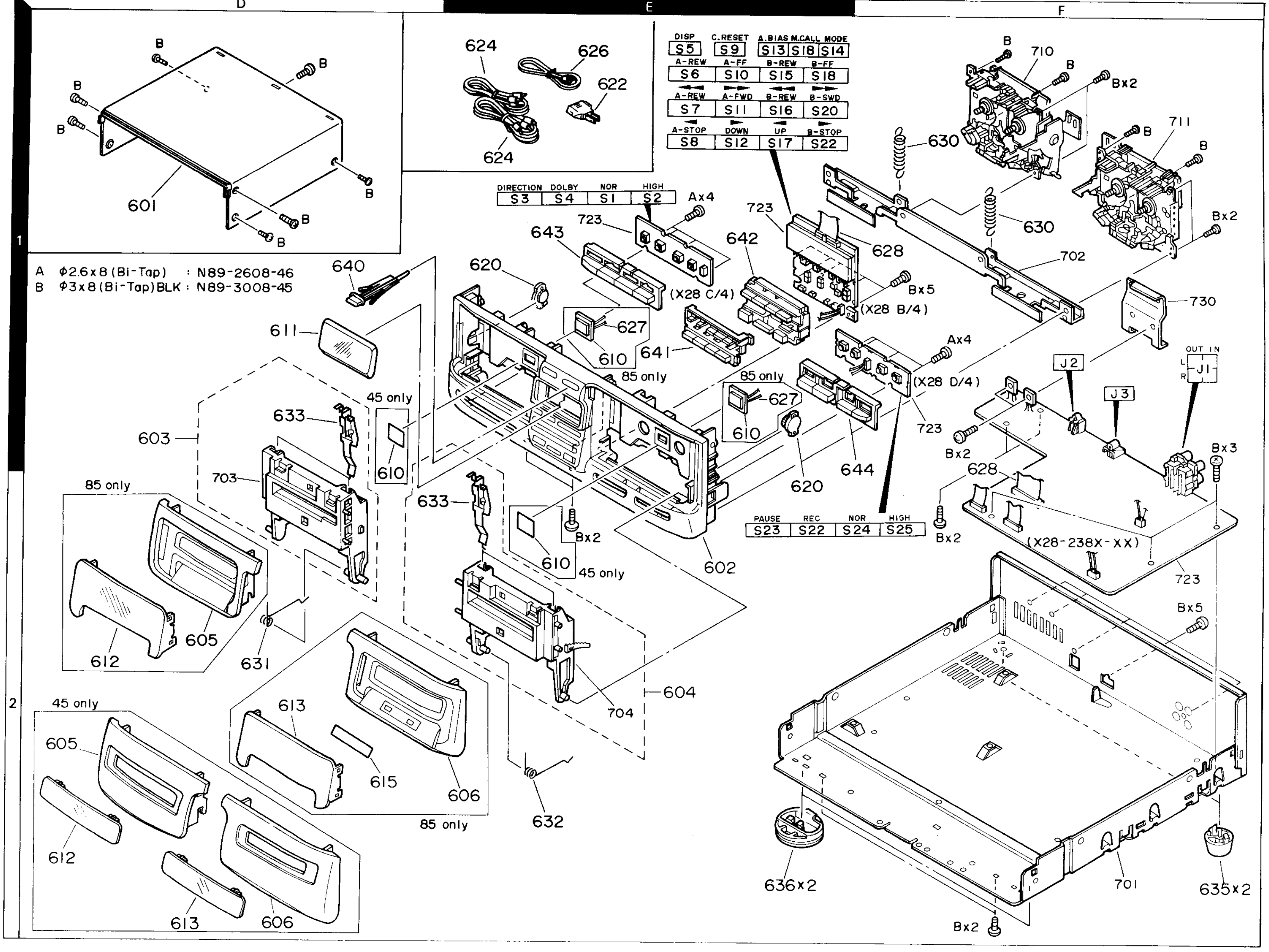
EXPLODED VIEW (UNIT)



A φ2.6x8(Bi-Tap) : N89-2608-46
B φ3x8(Bi-Tap)BLK : N89-3008-45

Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

⋇ New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

No.1

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
X-45						
601	1D	*	A01-1905-01	METALLIC CABINET		
602	2E	*	A60-0128-01	PANEL		
603	1D	*	A53-1308-03	CASSETTE HOLDER ASSY		A
604	2E	*	A53-1310-03	CASSETTE HOLDER ASSY		B
605	2D	*	A53-1312-02	CASSETTE LID		A
606	2D	*	A53-1313-02	CASSETTE LID		B
610	1D,2E		B07-1720-04	ESCUTCHEON		
611	1D	*	B10-1868-04	FRONT GLASS		
612	2D	*	B10-1869-04	FRONT GLASS		A
613	2D	*	B10-1870-04	FRONT GLASS		B
-			B46-0096-23	WARRANTY CARD	X	
-			B46-0122-13	WARRANTY CARD	E	
-			B46-0143-13	WARRANTY CARD	T	
620	1E		D39-0176-05	DAMPER		
⚠ 622	1E		E03-0115-05	AC PLUG ADAPTER	M	
624	1E		E30-0615-05	AUDIO CORD		
626	1E		E30-2627-05	CORD WITH CONNECTOR (SYNCRO)		
628	1E,1F	*	E35-0165-05	FLAT CABLE (CN3-CN4) 33P		
630	1F	*	G01-3405-04	EXTENSION SPRING		
631	2D	*	G01-3406-04	TORSION COIL SPRING		A
632	2E	*	G01-3407-04	TORSION COIL SPRING		B
633	1D,2E		G02-0944-04	FLAT SPRING		
		*	H50-0129-04	ITEM CARTON CASE		
-		*	H10-5170-02	POLYSTYRENE FOAMED FIXTURE L		
-		*	H10-5171-02	POLYSTYRENE FOAMED FIXTURE R		
-		*	H21-0279-04	PROTECTION SHEET	M	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	MXE	
-			H25-0382-04	PROTECTION BAG	XTE	
-		*	H25-0651-04	PROTECTION BAG (0232 PRINTED)	T	
635	2F		J02-0366-15	FOOT		
636	2E		J02-1040-05	FOOT		
640	1D	*	K29-4217-04	KNOB EJECT		
641	1E	*	K29-4218-03	KNOB DISP/C,RES/A,BIAS/M,CALL		
642	1E	*	K29-4219-03	KNOB PLAY/STOP/REC LEVEL		
643	1E	*	K29-4220-03	KNOB DEREC/DOLBY/DUBBING		
644	1E,1F	*	K29-4221-03	KNOB PAUSE/CCRS		
A	1E,1F		N89-2608-46	BINDING HEAD TAPTITE SCREW		
B	1D,1F		N89-3008-45	BINDING HEAD TAPTITE SCREW		
X-85						
601	1D	*	A01-1905-01	METALLIC CABINET		
602	2E	*	A60-0104-01	PANEL		
603	1D	*	A53-1308-03	CASSETTE HOLDER ASSY		A
604	2E	*	A53-1310-03	CASSETTE HOLDER ASSY		B
605	2D	*	A53-1306-02	CASSETTE LID		A
606	2E	*	A53-1307-02	CASSETTE LID		B
610	1E		B30-0740-05	LED(SLF-201C)		
611	1D	*	B10-1866-03	FRONT GLASS		
612	2D	*	B10-1867-03	FRONT GLASS		A
613	2D	*	B10-1868-04	FRONT GLASS		B

L:Scandinavia K:USA P:Canada
Y:PX(Far East, Hawaii) T:England E:Europe
Y:AAFES(Europe) X:Australia M:Other Areas

A: A DECK
B: B DECK
4: X-45
8: X-85

⚠ indicates safety critical components.

⋇ New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

No.2

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
615	2D		B43-0289-04	BADGE		
-			B46-0096-23	WARRANTY CARD	X	
-			B46-0122-13	WARRANTY CARD	E	
-			B46-0143-13	WARRANTY CARD	T	
620	1E		D39-0176-05	DAMPER		
⚠ 622	1E		E03-0115-05	AC PLUG ADAPTER	M	
624	1E		E30-0615-05	AUDIO CORD		
626	1E		E30-2627-05	CORD WITH CONNECTOR (SYNCRO)		
627	1E		E31-4860-05	WIRING HARNESS (LED LEAD)		
628	1E,1F	*	E35-0165-05	FLAT CABLE (CN3-CN4) 33P		
630	1F	*	G01-3405-04	EXTENSION SPRING		
631	2D	*	G01-3406-04	TORSION COIL SPRING		A
632	2E	*	G01-3407-04	TORSION COIL SPRING		B
633	1D,2E		G02-0944-04	FLAT SPRING		
		*	H50-0128-04	ITEM CARTON CASE		
-		*	H10-5170-02	POLYSTYRENE FOAMED FIXTURE L		
-		*	H10-5171-02	POLYSTYRENE FOAMED FIXTURE R		
-		*	H21-0279-04	PROTECTION SHEET	M	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	MXE	
-			H25-0382-04.	PROTECTION BAG	XTE	
-		*	H25-0651-04	PROTECTION BAG (0232 PRINTED)	T	
635	2F		J02-0366-15	FOOT		
636	2E		J02-1040-05	FOOT		
640	1D	*	K29-4217-04	KNOB EJECT		
641	1E	*	K29-4218-03	KNOB DISP/C,RES/A,BIAS/M,CALL		
642	1E	*	K29-4219-03	KNOB PLAY/STOP/REC LEVEL		
643	1E	*	K29-4220-03	KNOB DERECTION/DOLBY/DUBBING		
644	1E,1F	*	K29-4221-03	KNOB PAUSE/CCRS		
A	1E,1F		N89-2608-46	BINDING HEAD TAPTITE SCREW		
B	1D,1F		N89-3008-45	BINDING HEAD TAPTITE SCREW		
RECORD/PLAY BACK AMPLIFIER UNIT (X28-2380-01 : 8, 0-03 : 4)						
C1 ,2			CC45FSL1H221J	CERAMIC 220PF J		
C3 ,4			CK45FB1H471K	CERAMIC 470PF K		
C5			CK45FB1H102K	CERAMIC 1000PF K		8
C5 ,6			CK45FB1H561K	CERAMIC 560PF K		4
C6			CK45FB1H681K	CERAMIC 680PF K		8
C7 ,8			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C9 ,10			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C11 -14			CK45FB1H391K	CERAMIC 390PF K		
C15 ,16			CQ92FM1H153J	MYLAR 0.015UF J		
C17 ,18			CQ92FM1H223J	MYLAR 0.022UF J		
C19 ,20			CE04KW1C220M	ELECTRO 22UF 16WV		
C21 ,22			CE04KW0J221M	ELECTRO 220UF 6.3WV		
C23 ,24			CE04KW1C101M	ELECTRO 100UF 16WV		
C25 ,26			CF92FV1H333J	MF 0.033UF J		
C27 ,28		*	CK45FF1H333Z	CERAMIC 0.033UF Z		
C29			CE04KW1C331M	ELECTRO 330UF 16WV		
C30			CE04KW1V100M	ELECTRO 10UF 35WV		
C31 ,32			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C33 ,34			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C35 ,36			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C37 ,38			CE04KW1HR47M	ELECTRO 0.47UF 50WV		

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Y:AAFES(Europe) X:Australia M:Other Areas

A: A DECK
B: B DECK
4: X-45
8: X-85

⚠ indicates safety critical components.

⋇ New Parts
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Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

No.3

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
C39			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C40			CK45FF1H472Z	CERAMIC 4700PF Z		

⋇ New Parts
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Teile ohne Parts No. werden nicht geliefert.

No.4

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
C119,120			CC45FSL1H221J	CERAMIC 220PF J		4

× New Parts
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Teile ohne **Parts No.** werden nicht geliefert.

No.1

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
X-45						
601	1D	*	A01-1905-01	METALLIC CABINET		
602	2E	*	A60-0128-01	PANEL		
603	1D	*	A53-1308-03	CASSETTE HOLDER ASSY		A
604	2E	*	A53-1310-03	CASSETTE HOLDER ASSY		B
605	2D	*	A53-1312-02	CASSETTE LID		A
606	2D	*	A53-1313-02	CASSETTE LID		B
610	1D,2E		B07-1720-04	ESCUTCHEON		
611	1D	*	B10-1868-04	FRONT GLASS		
612	2D	*	B10-1869-04	FRONT GLASS		A
613	2D	*	B10-1870-04	FRONT GLASS		B
-			B46-0096-23	WARRANTY CARD	X	
-			B46-0122-13	WARRANTY CARD	E	
-			B46-0143-13	WARRANTY CARD	T	
620	1E		D39-0176-05	DAMPER		
⚠ 622	1E		E03-0115-05	AC PLUG ADAPTER	M	
624	1E		E30-0615-05	AUDIO CORD		
626	1E		E30-2627-05	CORD WITH CONNECTOR (SYNCRO)		
628	1E,1F	*	E35-0165-05	FLAT CABLE (CN3-CN4) 33P		
630	1F	*	G01-3405-04	EXTENSION SPRING		
631	2D	*	G01-3406-04	TORSION COIL SPRING		A
632	2E	*	G01-3407-04	TORSION COIL SPRING		B
633	1D,2E		G02-0944-04	FLAT SPRING		
		*	H50-0129-04	ITEM CARTON CASE		
-		*	H10-5170-02	POLYSTYRENE FOAMED FIXTURE L		
-		*	H10-5171-02	POLYSTYRENE FOAMED FIXTURE R		
-		*	H21-0279-04	PROTECTION SHEET	M	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	MXE	
-			H25-0382-04	PROTECTION BAG	XTE	
-		*	H25-0651-04	PROTECTION BAG (0232 PRINTED)	T	
635	2F		J02-0366-15	FOOT		
636	2E		J02-1040-05	FOOT		
640	1D	*	K29-4217-04	KNOB EJECT		
641	1E	*	K29-4218-03	KNOB DISP/C,RES/A,BIAS/M,CALL		
642	1E	*	K29-4219-03	KNOB PLAY/STOP/REC LEVEL		
643	1E	*	K29-4220-03	KNOB DEREC/DOLBY/DUBBING		
644	1E,1F	*	K29-4221-03	KNOB PAUSE/CCRS		
A	1E,1F		N89-2608-46	BINDING HEAD TAPTITE SCREW		
B	1D,1F		N89-3008-45	BINDING HEAD TAPTITE SCREW		
X-85						
601	1D	*	A01-1905-01	METALLIC CABINET		
602	2E	*	A60-0104-01	PANEL		
603	1D	*	A53-1308-03	CASSETTE HOLDER ASSY		A
604	2E	*	A53-1310-03	CASSETTE HOLDER ASSY		B
605	2D	*	A53-1306-02	CASSETTE LID		A
606	2E	*	A53-1307-02	CASSETTE LID		B
610	1E		B30-0740-05	LED(SLF-201C)		
611	1D	*	B10-1866-03	FRONT GLASS		
612	2D	*	B10-1867-03	FRONT GLASS		A
613	2D	*	B10-1868-04	FRONT GLASS		B

L:Scandinavia **K:**USA **P:**Canada
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4: X-45
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⚠ indicates safety critical components.

× New Parts
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Teile ohne **Parts No.** werden nicht geliefert.

No.2

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
615	2D		B43-0289-04	BADGE		
-			B46-0096-23	WARRANTY CARD	X	
-			B46-0122-13	WARRANTY CARD	E	
-			B46-0143-13	WARRANTY CARD	T	
620	1E		D39-0176-05	DAMPER		
⚠ 622	1E		E03-0115-05	AC PLUG ADAPTER	M	
624	1E		E30-0615-05	AUDIO CORD		
626	1E		E30-2627-05	CORD WITH CONNECTOR (SYNCRO)		
627	1E		E31-4860-05	WIRING HARNESS (LED LEAD)		
628	1E,1F	*	E35-0165-05	FLAT CABLE (CN3-CN4) 33P		
630	1F	*	G01-3405-04	EXTENSION SPRING		
631	2D	*	G01-3406-04	TORSION COIL SPRING		A
632	2E	*	G01-3407-04	TORSION COIL SPRING		B
633	1D,2E		G02-0944-04	FLAT SPRING		
		*	H50-0128-04	ITEM CARTON CASE		
-		*	H10-5170-02	POLYSTYRENE FOAMED FIXTURE L		
-		*	H10-5171-02	POLYSTYRENE FOAMED FIXTURE R		
-		*	H21-0279-04	PROTECTION SHEET	M	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	MXE	
-			H25-0382-04.	PROTECTION BAG	XTE	
-		*	H25-0651-04	PROTECTION BAG (0232 PRINTED)	T	
635	2F		J02-0366-15	FOOT		
636	2E		J02-1040-05	FOOT		
640	1D	*	K29-4217-04	KNOB EJECT		
641	1E	*	K29-4218-03	KNOB DISP/C,RES/A,BIAS/M,CALL		
642	1E	*	K29-4219-03	KNOB PLAY/STOP/REC LEVEL		
643	1E	*	K29-4220-03	KNOB DERECTION/DOLBY/DUBBING		
644	1E,1F	*	K29-4221-03	KNOB PAUSE/CCRS		
A	1E,1F		N89-2608-46	BINDING HEAD TAPTITE SCREW		
B	1D,1F		N89-3008-45	BINDING HEAD TAPTITE SCREW		
RECORD/PLAY BACK AMPLIFIER UNIT (X28-2380-01 : 8, 0-03 : 4)						
C1 ,2			CC45FSL1H221J	CERAMIC 220PF J		
C3 ,4			CK45FB1H471K	CERAMIC 470PF K		
C5			CK45FB1H102K	CERAMIC 1000PF K		8
C5 ,6			CK45FB1H561K	CERAMIC 560PF K		4
C6			CK45FB1H681K	CERAMIC 680PF K		8
C7 ,8			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C9 ,10			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C11 -14			CK45FB1H391K	CERAMIC 390PF K		
C15 ,16			CQ92FM1H153J	MYLAR 0.015UF J		
C17 ,18			CQ92FM1H223J	MYLAR 0.022UF J		
C19 ,20			CE04KW1C220M	ELECTRO 22UF 16WV		
C21 ,22			CE04KW0J221M	ELECTRO 220UF 6.3WV		
C23 ,24			CE04KW1C101M	ELECTRO 100UF 16WV		
C25 ,26			CF92FV1H333J	MF 0.033UF J		
C27 ,28		*	CK45FF1H333Z	CERAMIC 0.033UF Z		
C29			CE04KW1C331M	ELECTRO 330UF 16WV		
C30			CE04KW1V100M	ELECTRO 10UF 35WV		
C31 ,32			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C33 ,34			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C35 ,36			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C37 ,38			CE04KW1HR47M	ELECTRO 0.47UF 50WV		

L:Scandinavia **K:**USA **P:**Canada
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A: A DECK
B: B DECK
4: X-45
8: X-85

⚠ indicates safety critical components.

× New Parts
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Teile ohne **Parts No.** werden nicht geliefert.

No.3

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
C39			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C40			CK45FF1H472Z	CERAMIC 4700PF Z		
C41 ,42			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C43 ,44			CK45FB1H222K	CERAMIC 2200PF K		
C45 ,46			CC45FSL1H221J	CERAMIC 220PF J		
C47 ,48			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C49 -54			CQ92FM1H222J	MYLAR 2200PF J		
C55 ,56			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C57 -60			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C61 ,62			CK45FF1H223Z	CERAMIC 0.022UF Z		
C63 ,64			CE04KW1V100M	ELECTRO 10UF 35WV		
C65 ,66			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C67 ,68			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C69 ,70			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C71 ,72			CK45FB1H471K	CERAMIC 470PF K		8
C71 ,72			CK45FB1H821K	CERAMIC 820PF K		4
C73 ,74			CK45FB1H102K	CERAMIC 1000PF K		
C75 ,76			CK45FF1H103Z	CERAMIC 0.010UF Z		
C77 ,78			CK45FF1H223Z	CERAMIC 0.022UF Z		
C79			CE04KW1E221M	ELECTRO 220UF 25WV		
C80 ,81			CE04KW1V100M	ELECTRO 10UF 35WV		
C82			CE04KW1J330M	ELECTRO 33UF 63WV		
C83			CE04KW1H330M	ELECTRO 33UF 50WV		
C84			CE04KW1V330M	ELECTRO 33UF 35WV		
C85 ,86			CE04KW1V101M	ELECTRO 100UF 35WV		
C87			CE04KW1A471M	ELECTRO 470UF 10WV		
C88			CE04KW1E221M	ELECTRO 220UF 25WV		
C89			CE04KW1E102M	ELECTRO 1000UF 25WV		
C90			CE04KW1H471M	ELECTRO 470UF 50WV		
C91			CE04KW1V101M	ELECTRO 100UF 35WV		
C92			CC45FSL1H101J	CERAMIC 100PF J		
C93			CE04KW1A101M	ELECTRO 100UF 10WV		
C94			CE04KW1C471M	ELECTRO 470UF 16WV		
C95			CE04KW1E102M	ELECTRO 1000UF 25WV		
C96			CK45FB1H102K	CERAMIC 1000PF K		
C97			CE04KW1C471M	ELECTRO 470UF 16WV		
C98			CE04KW1V100M	ELECTRO 10UF 35WV		
C99			CE04KW1A101M	ELECTRO 100UF 10WV		
C100			CE04KW1V100M	ELECTRO 10UF 35WV		
C101			CE04KW0J471M	ELECTRO 470UF 6.3WV		
C102			CE04KW1V100M	ELECTRO 10UF 35WV		
C103			CE04KW1A101M	ELECTRO 100UF 10WV		
C104			CK45FF1H223Z	CERAMIC 0.022UF Z		
C105			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C106			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C107,108			CK45FF1H223Z	CERAMIC 0.022UF Z		
C109			CE04KW1A101M	ELECTRO 100UF 10WV		
C110			CE04KW0J222M	ELECTRO 2200UF 6.3WV		
C111			CK45FF1H223Z	CERAMIC 0.022UF Z		
C112,113			CK45FB1H102K	CERAMIC 1000PF K		
C114			CE04KW1V100M	ELECTRO 10UF 35WV		
C115			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C116,117			CK45FB1H392K	CERAMIC 3900PF K		
C118			CK45FB1H682K	CERAMIC 6800PF K		4
C118			CK45FF1H103Z	CERAMIC 0.010UF Z		8

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B: B DECK
4: X-45
8: X-85

⚠ indicates safety critical components

× New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

No.4

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
C119,120			CC45FSL1H221J	CERAMIC 220PF J		4
C121,122			CE04KW1A101M	ELECTRO 100UF 10WV		8
C123			CK45FB1H222K	CERAMIC 2200PF K		
C124			CE04KW1A101M	ELECTRO 100UF 10WV		8
C125,126			CK45FB1H471K	CERAMIC 470PF K		8
C127,128			CK45FF1H103Z	CERAMIC 0.010UF Z		8
C129-132			CK45FF1H223Z	CERAMIC 0.022UF Z		8
C133,134			C91-1434-05	FILM 150PF J		8
C135,136			C91-1436-05	FILM 220PF J		8
C137			CC45FSL2H100D	CERAMIC 10PF D		8
C138			CQ93HP2A103J	MYLAR 0.010UF J		
C139,140			CC45FSL1H221J	CERAMIC 220PF J		
C141-144			CK45FB1H471K	CERAMIC 470PF K		
J1			E13-0446-05	PHONO JACK REC IN,PLAY OUT		
J2			E08-0312-05	RECTANGULAR RECEPTACLE POWER		
J3			E08-0411-05	RECTANGULAR RECEPTACLE SYSTEM		
L1 ,2			L79-0720-05	LC FILTER		
L3 ,4			L32-0377-05	BIAS OSCILATING COIL		8
L5 -8			L40-1035-29	SMALL FIXED INDUCTOR(10MH, J)		
L9			L32-0388-05	BIAS OSCILATING COIL		8
L9			L32-0536-05	BIAS OSCILATING COIL		4
X1			L78-0244-05	RESONATOR 4.0MHz		
B	1F,2F		N89-3008-45	BINDING HEAD TAPTITE SCREW		
CP1			R90-0487-05	MULTI-COMP 47KX4 J 1/6W		
R184,185			RS14KB3D152J	FL-PROOF RS 1.5K J 2W		
R193			RS14KB3D271J	FL-PROOF RS 270 J 2W		
R194			RS14KB3D101J	FL-PROOF RS 100 J 2W		
VR1 -4			R12-0605-05	TRIMMING POT.(220)		
VR5 ,6			R12-1617-05	TRIMMING POT.(2.2K)		
VR7 ,8			R12-1616-05	TRIMMING POT.(1K)		
VR9 ,10			R12-3688-05	TRIMMING POT.(47K)		8
VR11,12			R12-5071-05	TRIMMING POT.(220K)		4
K1			S51-2089-05	MAGNETIC RELAY		
S1 -25			S40-1064-05	PUSH SWITCH		
D1 -11			S5566B	DIODE		
D1 -11			1SR139-100	DIODE		
D12 ,13			RB721Q	DIODE		
D14 -16			HZS2.7N(B2)	ZENER DIODE		
D14 -16			RD2.7ES(B2)	ZENER DIODE		
D17			HZS3.9N(B2)	ZENER DIODE		
D17			RD3.9ES(B2)	ZENER DIODE		
D18 ,19			HZS4.7N(B)	ZENER DIODE		
D18 ,19			RD4.7ES(B)	ZENER DIODE		
D20			HZS6.2N(B2)	ZENER DIODE		
D20			RD6.2ES(B2)	ZENER DIODE		
D21			HZS8.2N(B2)	ZENER DIODE		
D21			RD8.2ES(B2)	ZENER DIODE		
D22			HZS24N(B)	ZENER DIODE		
D22			RD24ES(B)	ZENER DIODE		
D23			HZS30N(B)	ZENER DIODE		
D23			RD30ES(B)	ZENER DIODE		
D24 -46			HSS104	DIODE		4

L:Scandinavia **K:**USA **P:**Canada
Y:PX(Far East, Hawaii) **T:**England **E:**Europe
Y:AAFES(Europe) **X:**Australia **M:**Other Areas

A: A DECK
B: B DECK
4: X-45
8: X-85

⚠ indicates safety critical components.

X-45/85

PARTS LIST

No.7

⁎ New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
353	2A		G02-0994-08	AZIMUTH SPRING		
354	1B,2B		G16-0780-08	REFLECT SEAL		
356	2A		J21-5789-08	HEAD PLATE ASSY		
357	2A		J31-0850-08	RETURN GEAR COLLAR		
358	1A,2B		J31-0851-08	EJECT LEVER COLLAR		
359	2B	*	J42-0184-08	REEL CAP BUSHING		
360	1A		J90-0679-08	TAPE GUIDE		
361	1A		J90-0680-08	TAPE GUIDE		
364	2A	*	N09-2883-08	AZIMUTH SCREW		
365	1A,2B		N09-2870-08	SCREW M2.6X5		
366	2B,1C		N09-2871-08	SCREW M2X6		
367	2A		N09-2872-08	SCREW M1.7X8		
368	2A		N09-2873-08	SCREW Ø2X6		
369	2A		N09-2876-08	HEAD SCREW		
370	1B		N19-1224-08	FLAT WASHER Ø4.1X6.5X0.25		
371	1C,2C		N19-1225-08	FLAT WASHER Ø2.1X4.0X0.25		
372	1B		N19-1285-08	FLAT WASHER Ø1.6X3.0X0.13		
373	2C		N19-1286-08	FLAT WASHER Ø2.3X4.0X0.25		
374	2A		N19-1287-08	FLAT WASHER Ø3.5X6.5X0.5		
375	1A		N19-1288-08	FLAT WASHER Ø1.65X5.0X0.5		
376	2B		N19-1289-08	FLAT WASHER Ø1.8X6.0X0.5		
380	2A,2B		N09-2877-08	TAP TITE SCREW M2X4		
381	1B		N35-2604-46	BINDING HEAD MACHINE SCREW		
385	1C		S74-0006-08	LEAF SWITCH		
386	1C		S74-0007-08	LEAF SWITCH		
388	2B		T94-0226-08	SOLENOID ASSY		
390	1C	*	W02-1130-08	ELECTRIC UNIT		
BM	1C		D16-0326-08	BELT		
PF	2B		D14-0341-08	PINCH ROLLER ASSY		
PR	2A		D14-0340-08	PINCH ROLLER ASSY		
MM	1B,1C		T42-0599-08	DC MOTOR ASSY		
PH	2A		T31-0066-08	PLAYBACK HEAD		A
RPEH	2A		T39-0015-08	REC/PLAYBACK/ERASE HEAD	4	B
RPEH	2A		T39-0020-08	REC/PLAYBACK/ERASE HEAD	8	B
PH1			NJL5165K	PHOTO REFLECTOR		
	1C					

L:Scandinavia K:USA P:Canada
Y:PX(Far East, Hawaii) T:England E:Europe
Y:AAFES(Europe) X:Australia M:Other Areas

A: A DECK
B: B DECK
4: X-45
8: X-85

⚠ indicates safety critical components.

SPECIFICATIONS

X - 45

Type	4 - track, 2 - channel stereo,	
Recording system	AC bias system (Bias frequency: 105kHz)	
Tape speed	4.76cm/sec. (1 - 7/8 ips)	
Heads		
Playback/Record head	1	(B deck)
Playback head	1	(A deck)
Erasing head	1	(B deck)
Motors	1	(each deck)
Fast winding time	Approx. 110 seconds with C - 60 tape	
Frequency response (B deck)		
Normal tape	30Hz to 18,000Hz	± 3dB
CrO₂ tape	30Hz to 19,000Hz	± 3dB
Metal tape	30Hz to 20,000Hz	± 3dB
Signal to noise ratio		
Dolby C NR ON	75dB (Metal tape)	
Dolby B NR ON	67dB (Metal tape)	
Dolby NR OFF	58dB (Metal tape)	
Harmonic distortion	Less than 0.8% (at 1kHz,0dB 3rd H.D.Metal/Normal tape)	
Wow and flutter	0.08% (W.R.M.S), ± 0.16% (DIN)	
General		
Power consumption	AC 16V, 2.0A	
Dimensions	W: 360 mm H: 120 mm D: 357 mm	
Weight (net)	3.6 kg	

X - 85

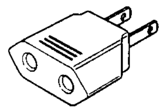
Type	4 - track, 2 - channel stereo,	
Recording system	AC bias system (Bias frequency: 105kHz)	
Tape speed	4.76cm/sec. (1 - 7/8 ips)	
Heads		
Playback/Record head	1	(B deck)
Playback head	1	(A deck)
Erasing head	1	(B deck)
Motors	1	(each deck)
Fast winding time	Approx. 110 seconds with C - 60 tape	
Frequency response (B deck)		
Normal tape	30Hz to 18,000Hz	± 3dB
CrO₂ tape	30Hz to 19,000Hz	± 3dB
Metal tape	30Hz to 20,000Hz	± 3dB
Signal to noise ratio		
Dolby C NR ON	75dB (Metal tape)	
Dolby B NR ON	67dB (Metal tape)	
Dolby NR OFF	58dB (Metal tape)	
Harmonic distortion	Less than 0.7% (at 1kHz, 0dB 3rd H.D.Metal/Normal tape)	
Wow and flutter	0.08% (W.R.M.S), ± 0.16% (DIN)	
General		
Power consumption	AC 16V, 2.0A	
Dimensions	W: 360 mm H: 120 mm D: 357 mm	
Weight (net)	3.7 kg	

Accessories

System control cord 1
(E30-2627-05)

Audio cord 3
(E30-0615-05)

AC plug adaptor 1
(except for some areas)
(E03-0115-05)



For the unit with a European AC plug in areas other than Europe.

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For this reason specifications may be changed without notice.
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Le système de réduction du bruit de fond est fabriqué sous license des Dolby Laboratories.

KENWOOD strebt ständige Verbesserungen in der Entwicklung an.
Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.
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Dolby-Rauschunterdrückung mit Lizenz der Dolby Laboratories gefertigt.

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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KENWOOD & LEE ELECTRONICS, LTD.
Wang Kee Building, 4th Floor, 34-37, Connaught Road, Central, Hong Kong

FM/MW/LW STEREO SYNTHESIZER TUNER

T-85/85L

SERVICE MANUAL

KENWOOD

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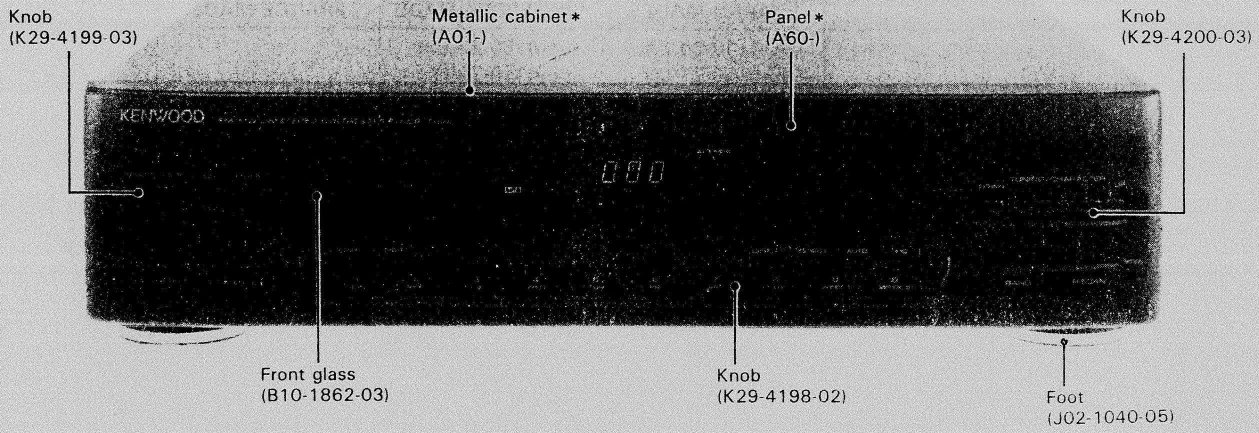
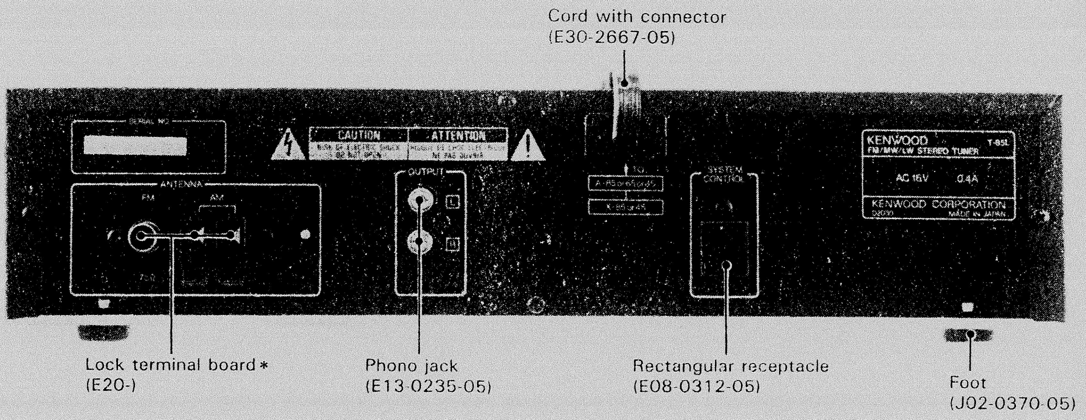
B51-4346-00(T)1816


Knob
(K29-4199-03)
Metallic cabinet *
(A01-)
Panel *
(A60-)
Knob
(K29-4200-03)
KENWOOD
Front glass
(B10-1862-03)
Knob
(K29-4198-02)
Foot
(J02-1040-05)


Cord with connector
(E30-2667-05)
CAUTION
ATTENTION
ANTENNA
FM
AM
OUTPUT
SYSTEM CONTROL
KENWOOD
T-85L
FM/MW/LW STEREO TUNER
AC 16V
0.4A
KENWOOD CORPORATION
MADE IN JAPAN
Lock terminal board *
(E20-)
Phono jack
(E13-0235-05)
Rectangular receptacle
(E08-0312-05)
Foot
(J02-0370-05)

T-85 and T-85L don't have a power supply transformer. Use A-45/65/85/ or RM-90PS power supply to supply power. If neither is available, adjust to operate as instructed on page 8.

When turning the power on, short the connector pin of CN201 (X05-B/2).

*** Refer to Parts List on page 25.**
Photo is T-85L.

T-85/85L

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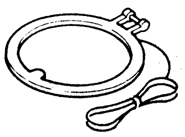
SCHEMATIC DIAGRAM (T-85) 12
SCHEMATIC DIAGRAM (T-85L) 18
EXPLODED VIEW 24
PARTS LIST 25
SPECIFICATIONS .... Back cover

	JAPAN MADE	SINGAPORE MADE	FRANCE MADE
T-85	X05-4140-20 (M) X05-4140-71 (X)	X05-4150-20 (M) X05-4150-71 (X)	————
T-85L	X05-4142-71 (T,E)	X05-4152-71 (T,E)	X05-4142-72 (E)

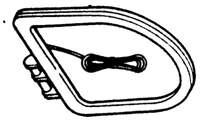
The T-85 and T-85L are made in different countries. However, their circuits are identical.

Accessories

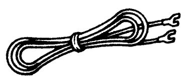
LOOP ANTENNA
(T90-0153-05): FRANCE MADE



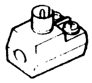
LOOP ANTENNA
(T90-0173-05): JAPAN MADE
(T90-0174-05): SINGAPORE MADE



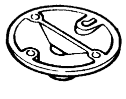
T TYPE ANTENNA
(T90-0176-05): JAPAN MADE
(T90-0176-05): FRANCE MADE
(T90-0175-05): SINGAPORE MADE



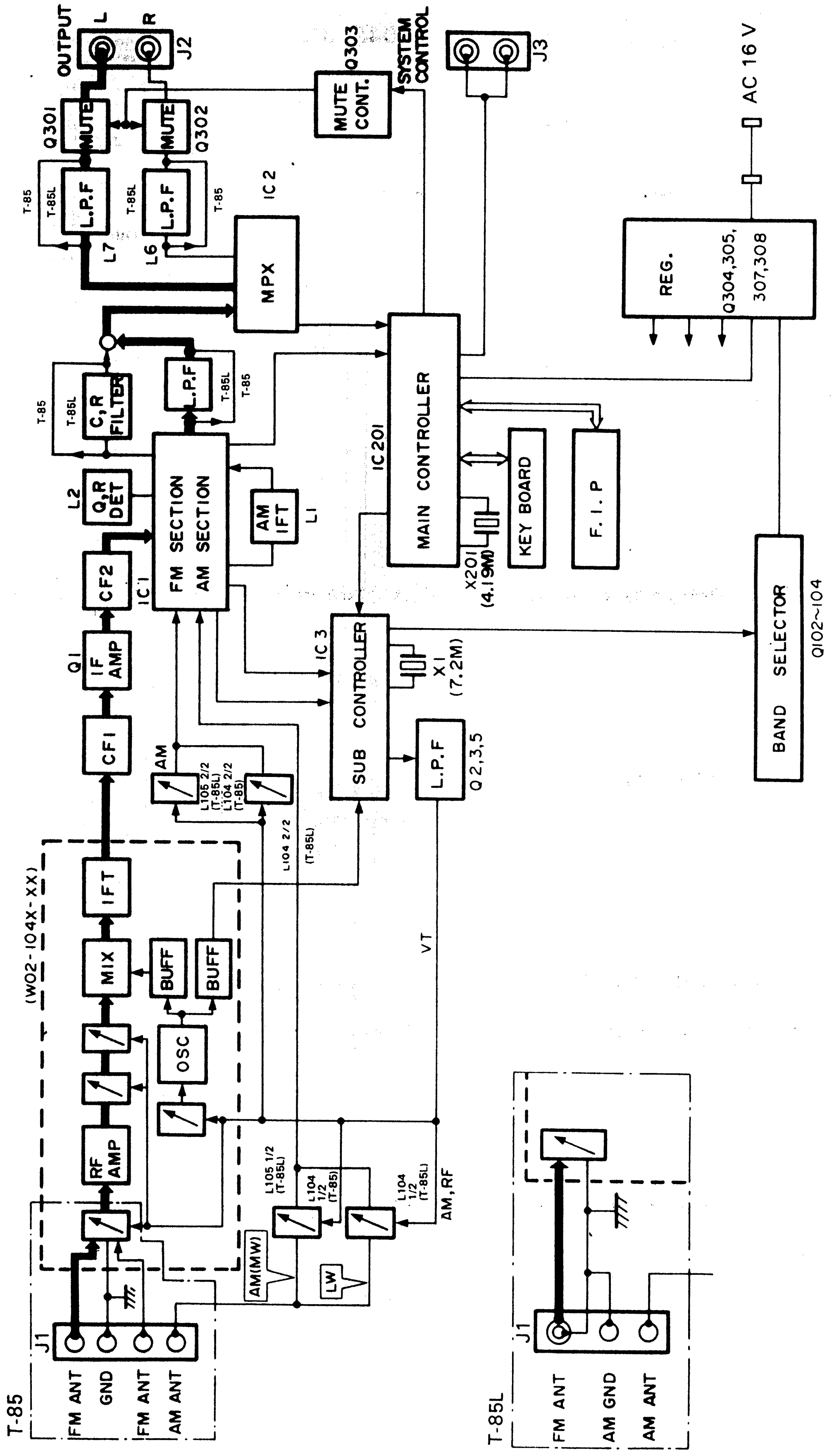
ANTENNA ADAPTOR
(T90-0177-05): (T-85L ONLY)



ANTENNA HOLDER
(J19-2815-04)



BLOCK DIAGRAM


OUTPUT
L
R
J2
J3
SYSTEM CONTROL
MUTE CONT.
Q303
Q301
MUTE
MUTE
Q302
L.P.F
L.P.F
T-85
T-85L
L7
L6
IC 2
MPX
AC 16 V
REG.
Q304,305, 307,308
C,R FILTER
L.P.F
T-85L
T-85
MAIN CONTROLLER
IC201
KEY BOARD
F. I. P
X201 (4.19M)
L2
Q,R DET
FM SECTION
AM SECTION
AM IFT
L1
IC 1
CF2
Q1
IF AMP
CF1
IC 3
SUB CONTROLLER
X1 (7.2M)
L.P.F
Q 2,3,5
BAND SELECTOR
Q102~104
AM
L106 2/2 (T-85L)
L104 2/2 (T-85)
L104 2/2
(T-85L)
(W02-104X-XX)
IFT
MIX
BUFF
BUFF
OSC
RF AMP
VT
L105 1/2 (T-85L)
L104 1/2 (T-85)
L104 1/2 (T-85L)
AM, RF
AM(MW)
LW
J1
T-85
FM ANT
GND
FM ANT
AM ANT
J1
T-85L
FM ANT
AM GND
AM ANT

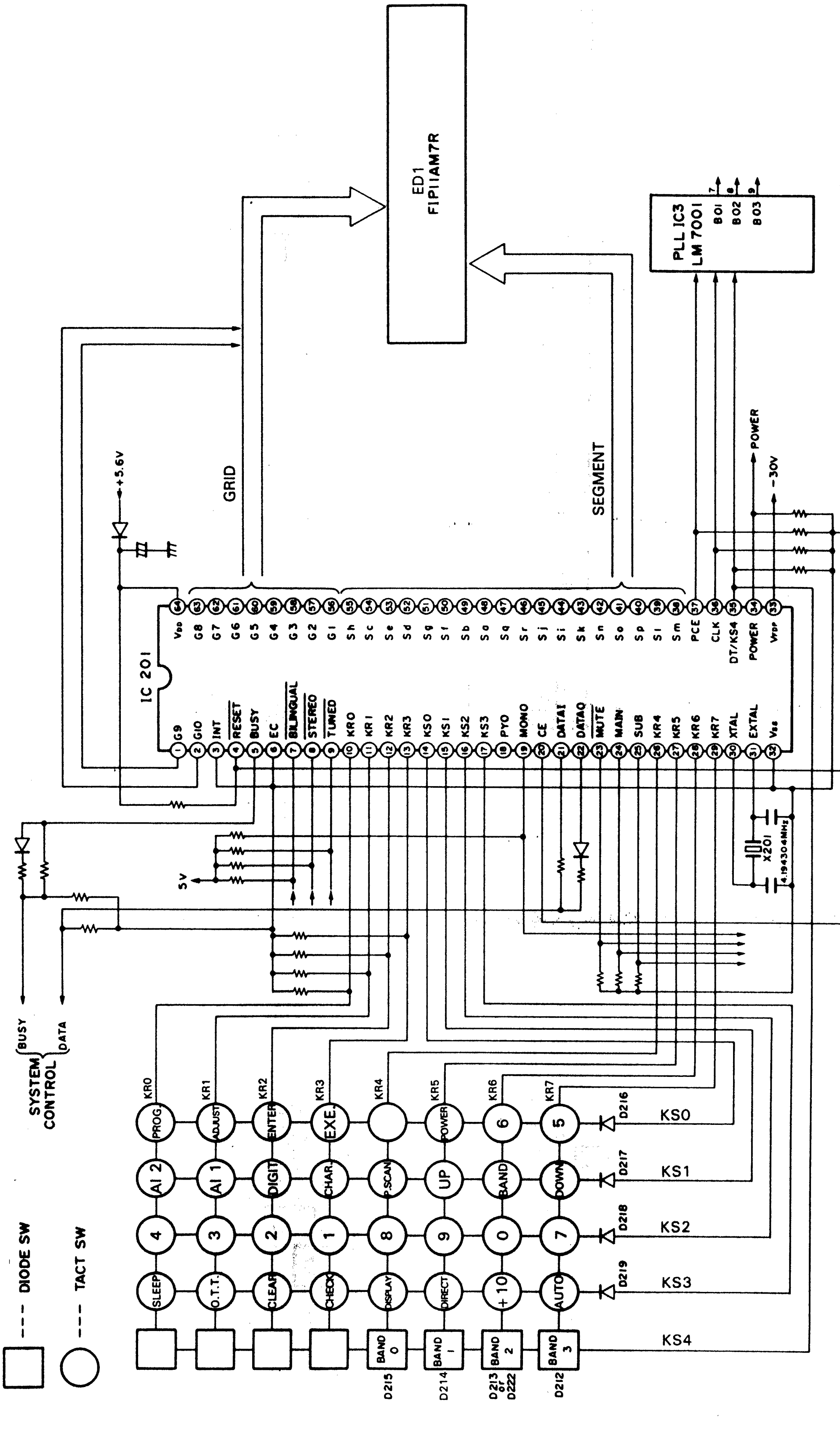
T-85/85L

CIRCUIT DESCRIPTION

Blockdiagram of surrounding microprocessor (CXP50216-104S: IC201)

BAND SELECT

DESTINATION	BAND	B01	B02	B03
J	FM	L	H	L
	AM	L	L	H
	VHF L	H	H	L
	VHF H	H	H	H
	UHF	H	L	L
Other	FM	H	H	L
	AM	H	L	H
	LW	L	H	H


ED1
FIP11AM7R
PLL IC3
LM7001
B01
B02
B03
7
8
9
GRID
SEGMENT
+5.6V
POWER
-30V
IC 201
VDD G8 G7 G6 G5 G4 G3 G2 G1 Sh Sc Se Sd Sg Sf Sb Sa Sq Sr Sj Si Sk Sn So Sp Sl Sm PCE CLK DT/KS4 POWER VFDP
G9 G10 INT RESET BUSY EC BILINGUAL STEREO TUNED KR0 KR1 KR2 KR3 KS0 KS1 KS2 KS3 PYO MONO CE DATAI DATAO MUTE MAIN SUB KR4 KR5 KR6 KR7 XTAL EXTAL Vss
5V
X201
4.194304MHz
SYSTEM CONTROL
BUSY
DATA
KR0
KR1
KR2
KR3
KR4
KR5
KR6
KR7
PROG
ADJUST
ENTER
EXE.
POWER
6
5
AI 2
AI 1
DIGIT
CHAR.
P.SCAN
UP
BAND
DOWN
4
3
2
1
8
9
0
7
SLEEP
O.T.T.
CLEAR
CHECK
DISPLAY
DIRECT
+10
AUTO
BAND 0
BAND 1
BAND 2
BAND 3
D215
D214
D213 or D222
D212
D216
D217
D218
D219
KS0
KS1
KS2
KS3
KS4
--- DIODE SW
--- TACT SW

CIRCUIT DESCRIPTION

Pin functions

Pin No.	Pin name	I/O	Name	Operation description
1, 2	T1, T0	O	G9, G10	FL grid output 9G, 10G
3	INT	I		No use (GND)
4	RST	I	$\overline{\text{RESET}}$	Reset input H: NORMAL L: RESET
5	ADI/PB3	I/O	BUSY	System control BUSY input/output
6	EC	I		No use (GND)
7	SC/PX0	I	$\overline{\text{BIL}}$	BILINGUAL H: NORMAL L: BILINGUAL
8	SO/PX1	I	$\overline{\text{STEREO}}$	Stereo signal input H: MONO L: STEREO
9	SI/PX2	I	$\overline{\text{TUNED}}$	Tuning signal input H: NO L: TUNED
10 ~ 13	PF0 ~ PF3	I	KR0 ~ KR3	Key return input H: ON L: OFF
14 ~ 17	PE0 ~ PE3	O	KS0 ~ KS3	Key scan output H: ON L: OFF
18	PY0	O		No use (OPEN)
19	PWM/PY1	O	MONO	Forced MONO output H: MONO L: STEREO
20	WP/PY2	I	CE	AC OFF detection input H: AC ON L: AC OFF
21	RMC/PY3	I	DATAI	System control DATA input
22	PD0	O	DATAO	System control DATA output
23	PD1	O	$\overline{\text{MUTE}}$	Line mute H: MUTE OFF L: MUTE ON
24	PD2	O	MAIN	No use
25	PD3	O	SUB	No use
26 ~ 29	PC0 ~ PC3	I	KR4 ~ KR7	Key return input H: ON L: OFF
30	XTAL			Quartz oscillator 4.194304MHz
31	EXTAL			Quartz oscillator 4.194304MHz
32	V_{SS}			GND pin
33	V_{FDP}			−30 V
34	PH0/S0	O	POWER	POWER ON/OFF control H: ON L: OFF
35	PH1/S1	O	DT/KS4	PLL DATA output Key scan output for destination SW
36	PH2/S2	O	CLK	PLL CLOCK output
37	PH3/S3	O	PCE	PLL CE output
38 ~ 55	PG0/S4 ~ S23/T8	O	Sm ~ Sh	FL segment output (m, l, p, o, n, k, i, j, r, q, a, b, f, g, d, e, c, h)
56 ~ 63	S22/T9 ~ T2	O	G1 ~ G8	FL grid output 1G ~ 8G
64	V_{DD}			+5 V (Power supply)

T-85/85L

CIRCUIT DESCRIPTION

Test mode

(1) Method of setting
While pressing the DOWN key, turn AC ON.

(2) Contents
Power ON
FLL all lit
Test frequency setting (Table 1)

(3) Method of canceling
Clearing the FL all lit state is performed by numeral key, BAND key, UP/DOWN key or POWER key.

Initial status setting (reset)

(1) Method
While pressing the ENTER key, turn AC ON.

(2) Contents
The all memory is cleared and the initial status is fully restored. At this time, however, test frequency is newly memorized in the preset memory. (Table 1)

Destination Preset channel	T-85		T-85L
	J TYPE	M, X TYPE	T, E TYPE
01ch	FM 83.5 MHz	FM 98.0 MHz	FM 98.0 MHz
02ch	FM 90.0 MHz	FM 108.0 MHz	FM 108.0 MHz
03ch	AM 630 kHz	AM 630 kHz	AM 630 kHz
04ch	AM 990 kHz	AM 990 kHz	AM 990 kHz
05ch	AM 1440 kHz	AM 1440 kHz	AM 1440 kHz
06ch	AM 1602 kHz	AM 1602 kHz (AM 1610 kHz)	AM 1602 kHz
07ch	TV 3 ch	FM 87.5 MHz	LW 162 kHz
08ch	TV 8 ch	FM 87.5 MHz	LW 216 kHz
09ch	TV 35 ch	FM 87.5 MHz	LW 270 kHz
10ch	FM 89.1 MHz	FM 89.1 MHz	FM 89.1 MHz
11ch	TV 1 ch	FM 87.5 MHz	LW 281 kHz
12ch	TV 3 ch	FM 87.5 MHz	FM 87.5 MHz
13ch	TV 4 ch	FM 87.5 MHz	FM 87.5 MHz
14ch	TV 8 ch	FM 87.5 MHz	FM 87.5 MHz
15ch	TV 12 ch	FM 87.5 MHz	FM 87.5 MHz
16ch	TV 13 ch	FM 87.5 MHz	FM 87.5 MHz
17ch	TV 35 ch	FM 87.5 MHz	FM 87.5 MHz
18ch	TV 62 ch	FM 87.5 MHz	FM 87.5 MHz
19ch	FM 76.0 MHz	FM 87.5 MHz	FM 87.5 MHz
20ch ~ 30ch	FM 76.0 MHz	FM 87.5 MHz	FM 87.5 MHz

(Table 1)

Conditions by destination

	Destination type	Destination switches				Band	Receiving frequency range	Inter-channel space	Intermediate frequency	PLL reference frequency
		B3	B2	B1	B0					
T-85	J	0	0	0	0	FM	76.0 ~ 90.0 MHz	100 kHz	− 10.75 MHz	25 kHz
						AM	531 ~ 1602 kHz	9 kHz	+ 450 kHz	9 kHz
						TV	1 ~ 62ch	6 MHz	− 10.75 MHz	25 kHz
	M	1	1 or 0	1	0	FM	87.5 ~ 108.0 MHz	100 kHz /50 kHz	+ 10.7 MHz	50 kHz
						AM	531 ~ 1602 kHz or 530 ~ 1610 kHz	9 kHz or 10 kHz	+ 450 kHz	10 kHz
	K,P	1	0	0	0	FM	87.5 ~ 108.0 MHz	100 kHz	+ 10.7 MHz	50 kHz
						AM	530 ~ 1700 kHz	10 kHz	+ 450 kHz	10 kHz
	X	1	1	0	0	FM	87.5 ~ 108.0 MHz	50 kHz	+ 10.7 MHz	50 kHz
						AM	531 ~ 1602 kHz	9 kHz	+ 450 kHz	9 kHz
T-85L	T,E	1	1	0	1	FM	87.5 ~ 108.0 MHz	50 kHz	+ 10.7 MHz	50 kHz
						MW	531 ~ 1602 kHz	9 kHz	+ 450 kHz	9 kHz
						LW	153 ~ 281 kHz	1 kHz	+ 450 kHz	1 kHz

ADJUSTMENT

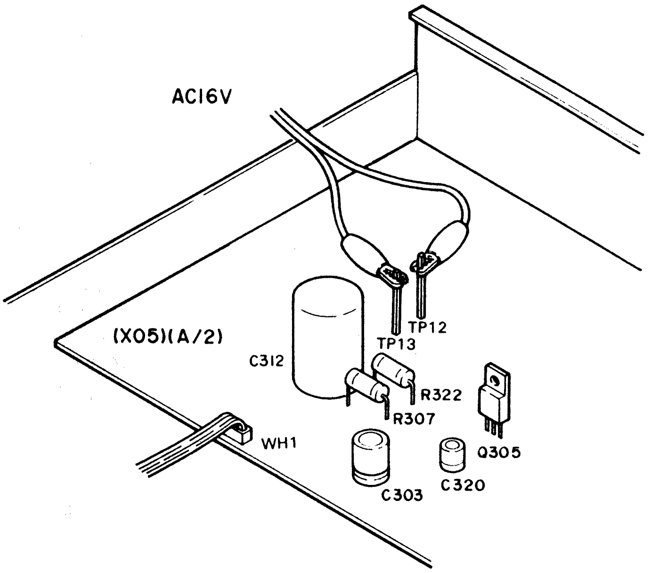
No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
FM SECTION			SELECTOR: FM				
1	DISCRIMINATOR	(A) 98.0MHz 1kHz,±75kHz dev (M,X type) 1kHz,±40kHz dev (E,T type) 60dBμ (ANT input)	Connect a DC voltmeter between TP3 and TP4. (X05-)	AUTO or MONO 98.0MHz	L2 (X05-)	0V	(a)
2	VCO	(A) 98.0MHz 0 dev 60dBμ (ANT input)	Connect a frequency counter to TP5 and TP6 (GND). (X05-)	AUTO 98.0MHz	VR2 (X05-)	19.00kHz	(b)
3	DISTORTION (STEREO)	(C) 98.0MHz 1kHz,±68.25kHz dev Pilot:±7.5kHz dev (M,X type) 1kHz,±40kHz dev Pilot:±6kHz dev (E,T type) 60dBμ (ANT input)	(B)	MONO 98.0MHz	IFT (W02-)	Minimum distortion	
4	SEPARATION (E,T type only)	(C) 98.0MHz 1kHz,±40kHz dev Pilot ±6kHz dev Selector:L or R 60dBμ (ANT input)	(B)	AUTO 98.0MHz	VR4 (X05-)	Minimum crosstalk	
5	TUNING LEVEL	(A) 98.0MHz 1kHz,±75kHz dev (M,X type) 1kHz,±45kHz dev (E,T type) 14dBμ(ANT input) 75Ω 18dBμ(ANT input)300Ω	(B)	AUTO or MONO 98.0MHz	VR1 (X05-)	Adjust VR1 and stop at the point where ED1(TUNED) goes on.	
AM (MW) SECTION			SELECTOR:AM(MW)				
(1)	TUNING LEVEL	(D) 1008kHz 400Hz,30% mod 26dBμ(ANT input)	(B)	1008kHz	VR3 (X05-)	Adjust VR3 and stop at the point where ED1(TUNED) goes on.	

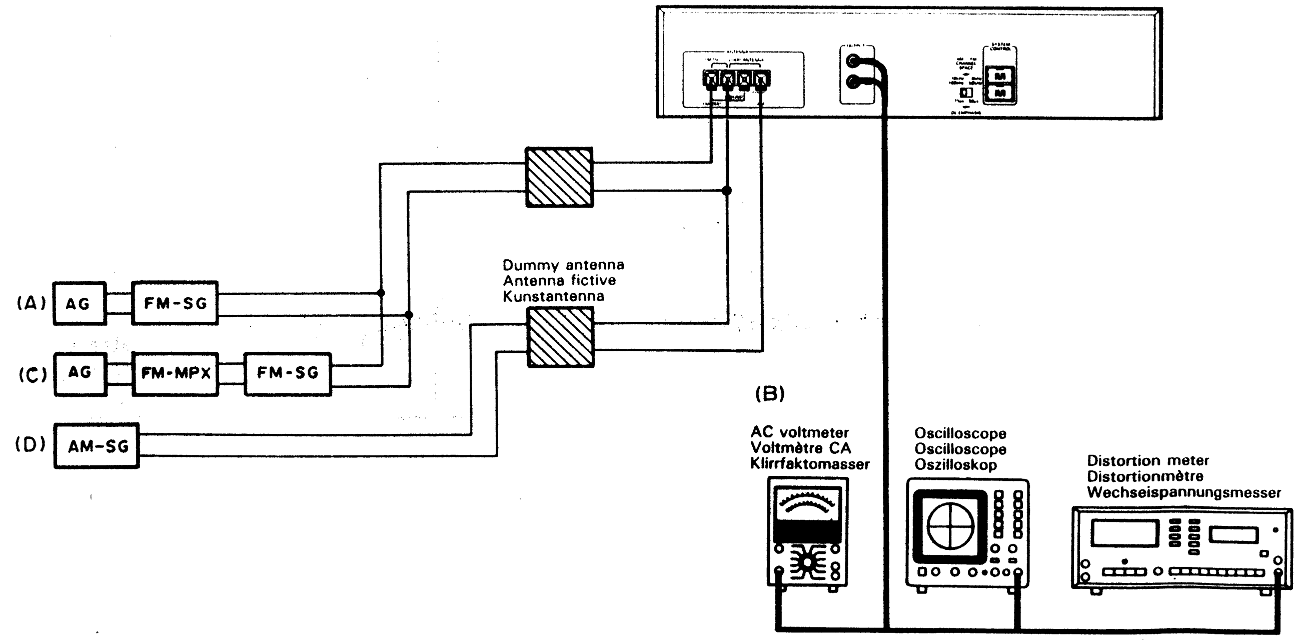
T-85/85L

ADJUSTMENT

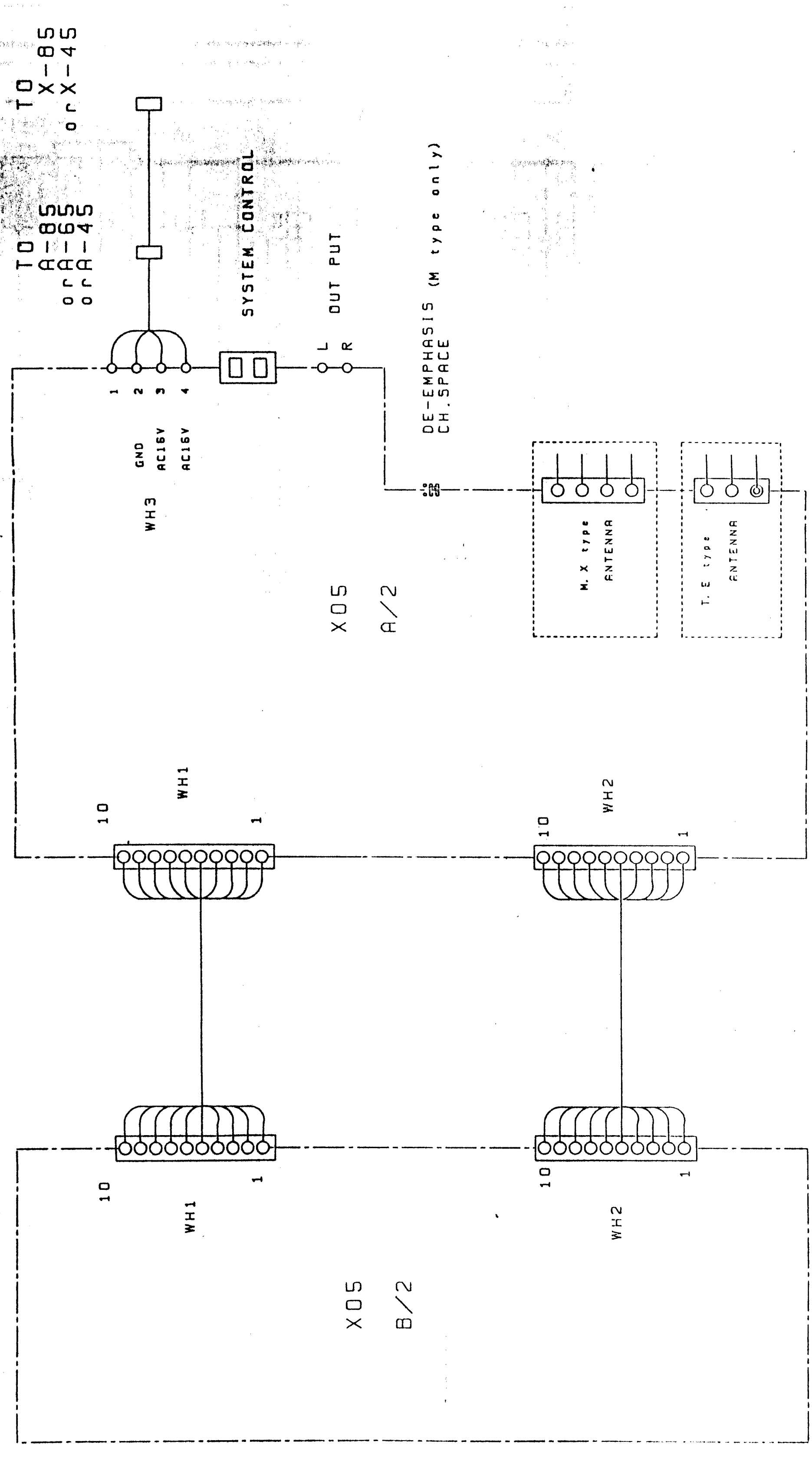
The T-85 and T-85L don't have a power transformer. Use A-45/65/85 or RM-90PS to supply power to the T-85/85L. If neither is available, apply AC 16 V to TP12 and TP13 of the tuner unit (X05, A/2).

When turning the power on, short the connector pin of CN 201 (X05-B/2).

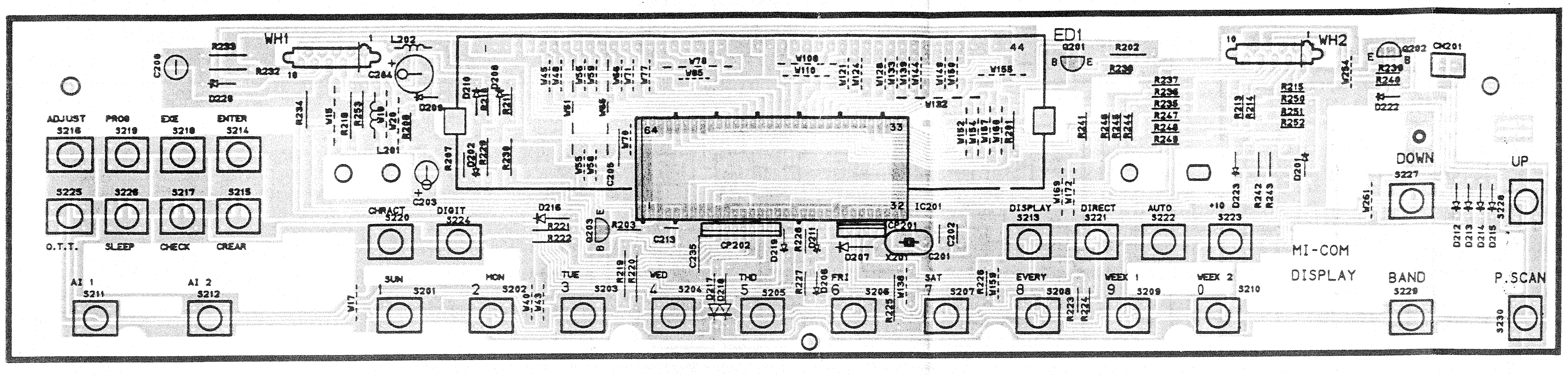

AC16V
(X05)(A/2)
C312
TP12
TP13
R322
R307
WH1
Q305
C303
C320

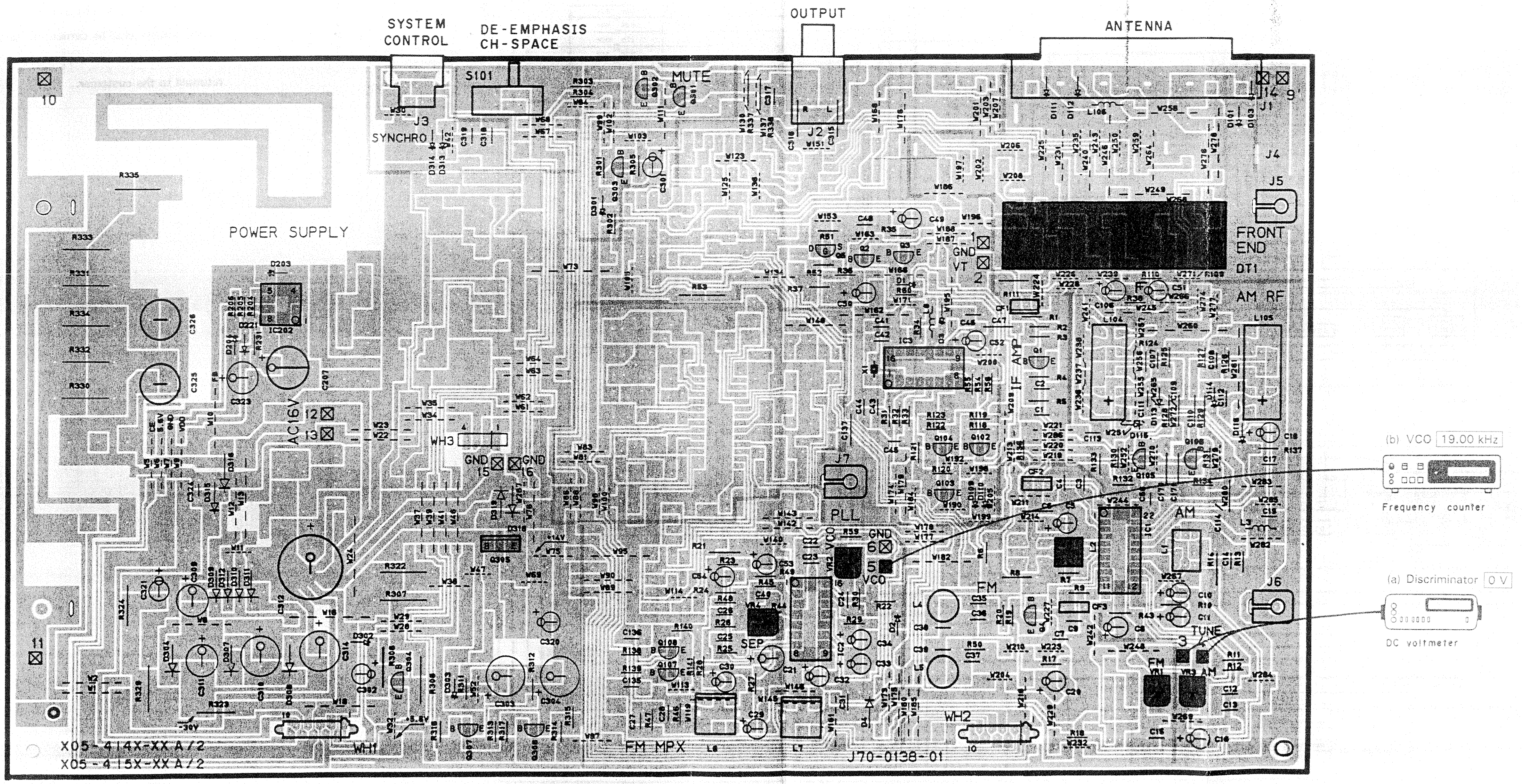

Dummy antenna
Antenna fictive
Kunstantenna
(A) AG
FM-SG
(C) AG
FM-MPX
FM-SG
(D) AM-SG
(B)
AC voltmeter
Voltmètre CA
Klirrfaktomasser
Oscilloscope
Oscilloscope
Oszilloskop
Distortion meter
Distortionmètre
Wechseispannungsmesser

WIRING DIAGRAM


TO X-85
or X-45
TO A-85
or A-65
or A-45
SYSTEM CONTROL
OUT PUT
L
R
DE-EMPHASIS (M type only)
CH.SPACE
1
2
3
4
GND
AC16V
AC16V
WH3
X05 A/2
M.X type ANTENNA
T.E type ANTENNA
WH1
10
1
WH2
10
1
WH1
10
1
WH2
10
1
X05 B/2

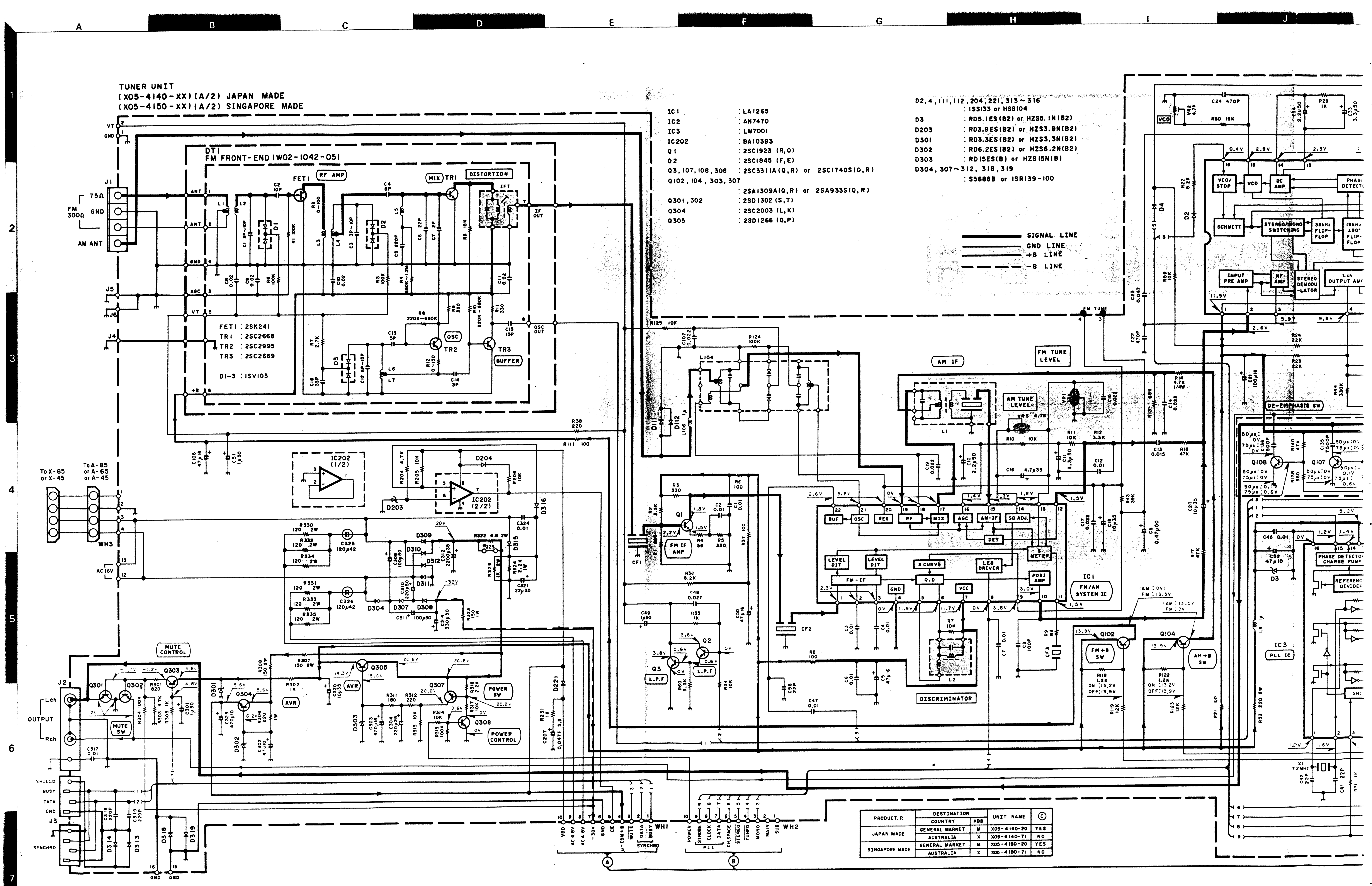
PC BOARD (Component side view)


WH1
ED1
WH2
IC201
ADJUST
PROG
EXE
ENTER
O.T.T.
SLEEP
CHECK
CREAR
AI 1
AI 2
CHRACT
DIGIT
SUN
MON
TUE
WED
THU
FRI
SAT
EVERY
WEEK 1
WEEK 2
DISPLAY
DIRECT
AUTO
DOWN
UP
MI-COM
DISPLAY
BAND
P.SCAN


SYSTEM
CONTROL
DE-EMPHASIS
CH-SPACE
OUTPUT
ANTENNA
S101
MUTE
J3
SYNCHRO
J2
J1
J4
J5
FRONT
END
DT1
AM RF
POWER SUPPLY
AC16V
WH3
GND
IF AMP
PLL
VCO
SEP
FM
AM
TUNE
J6
J7
WH1
WH2
FM MPX
X05-414X-XX A/2
X05-415X-XX A/2
J70-0138-01
(b) VCO 19.00 kHz
Frequency counter
(a) Discriminator 0 V
DC voltmeter

Refer to the schematic diagram for the values of resistors and capacitors.

TUNER UNIT
(X05-4140-XX)(A/2) JAPAN MADE
(X05-4150-XX)(A/2) SINGAPORE MADE

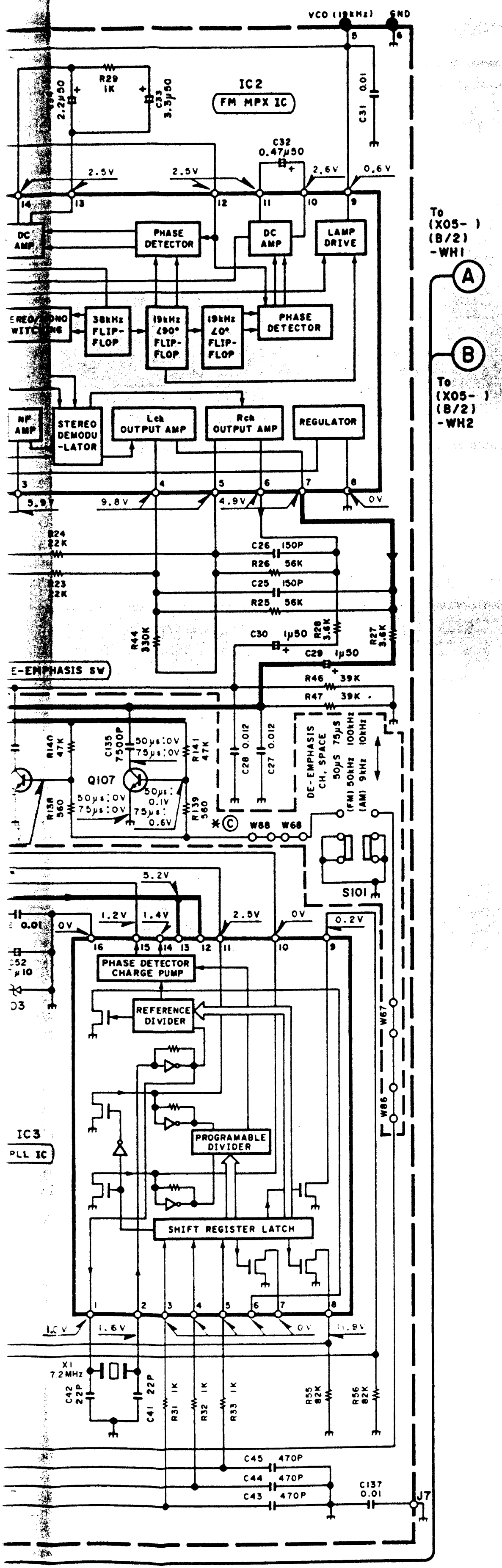

A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
DT1
FM FRONT-END (W02-1042-05)
RF AMP
MIX
DISTORTION
OSC
BUFFER
FET1 : 2SK241
TR1 : 2SC2668
TR2 : 2SC2995
TR3 : 2SC2669
D1~3 : 1SV103
J1
75Ω
FM 300Ω
GND
AM ANT
J4
J5
J6
IF OUT
OSC OUT
IC202 (1/2)
IC202 (2/2)
To X-85 or X-45
To A-85 or A-65 or A-45
WH3
AC16V
MUTE CONTROL
MUTE SW
AVR
POWER SW
POWER CONTROL
J2
OUTPUT
Lch
Rch
J3
SHIELD
BUSY
DATA
GND
SYNCHRO
FM IF AMP
L.P.F
AM IF
FM TUNE LEVEL
AM TUNE LEVEL
DISCRIMINATOR
IC1
FM/AM SYSTEM IC
BUF
OSC
REG
RF
MIX
AGC
AM-IF
SD ADJ.
DET
S METER
LEVEL DIT
FM-IF
S CURVE
Q.D
LED DRIVER
POSI AMP
GND
VCC
FM+B SW
AM+B SW
VCO
VCO/STOP
DC AMP
PHASE DETECT
SCHMITT
STEREO/MONO SWITCHING
38kHz FLIP-FLOP
19kHz ∠90° FLIP-FLOP
INPUT PRE AMP
NF AMP
STEREO DEMODU-LATOR
Lch OUTPUT AMP
DE-EMPHASIS SW
PHASE DETECTOR CHARGE PUMP
REFERENCE DIVIDER
IC3
PLL IC
X1 7.2MHz
WH1
VDD
AC4.8V
AC4.8V
-30V
GND
CE
μ-COM+B
MUTE
DATA
BUSY
SYNCHRO
WH2
POWER
STROBE
CLOCK
DATA
CH.SPACE
STEREO
TUNED
MONO
MAIN
SUB
PLL
FM TUNE

IC1 : LA1265
IC2 : AN7470
IC3 : LM7001
IC202 : BA10393
Q1 : 2SC1923 (R,O)
Q2 : 2SC1845 (F,E)
Q3, 107, 108, 308 : 2SC3311A(Q,R) or 2SC1740S(Q,R)
Q102, 104, 303, 307
: 2SA1309A(Q,R) or 2SA933S(Q,R)
Q301, 302 : 2SD1302 (S,T)
Q304 : 2SC2003 (L,K)
Q305 : 2SD1266 (Q,P)

D2, 4, 111, 112, 204, 221, 313~316
: 1SS133 or HSS104
D3 : RD5.1ES(B2) or HZS5.1N(B2)
D203 : RD3.9ES(B2) or HZS3.9N(B2)
D301 : RD3.3ES(B2) or HZS3.3N(B2)
D302 : RD6.2ES(B2) or HZS6.2N(B2)
D303 : RD15ES(B) or HZS15N(B)
D304, 307~312, 318, 319
: S5688B or 1SR139-100

SIGNAL LINE
GND LINE
+B LINE
-B LINE

PRODUCT. P.	DESTINATION		UNIT NAME	Ⓒ
	COUNTRY	ABB.		
JAPAN MADE	GENERAL MARKET	M	X05-4140-20	YES
	AUSTRALIA	X	X05-4140-71	NO
SINGAPORE MADE	GENERAL MARKET	M	X05-4150-20	YES
	AUSTRALIA	X	X05-4150-71	NO


VCO (19kHz)
GND
IC2
FM MPX IC
R29 1K
2.2μ50
C33 3.3μ50
C31 0.01
C32 0.47μ50
2.5V
2.5V
2.6V
0.6V
14
13
12
11
10
9
DC AMP
PHASE DETECTOR
DC AMP
LAMP DRIVE
STEREO/MONO SWITCHING
38kHz FLIP-FLOP
19kHz ∠90° FLIP-FLOP
19kHz ∠0° FLIP-FLOP
PHASE DETECTOR
MF AMP
STEREO DEMODULATOR
Lch OUTPUT AMP
Rch OUTPUT AMP
REGULATOR
To (X05-) (B/2) -WH1
A
B
To (X05-) (B/2) -WH2
3
4
5
6
7
8
5.9V
9.8V
4.9V
0V
R24 22K
R23 22K
C26 150P
R26 56K
C25 150P
R25 56K
R44 330K
R28 3.6K
R27 3.6K
C30 1μ50
C29 1μ50
DE-EMPHASIS SW
R46 39K
R47 39K
R140 47K
C135 7500P
50μs:0V
75μs:0V
R141 47K
Q107
50μs:0V
75μs:0V
50μs: 0.1V
75μs: 0.6V
R138 560
R139 560
C28 0.012
C27 0.012
DE-EMPHASIS CH. SPACE
50μS 75μS
(FM) 50kHz 100kHz
(AM) 9kHz 10kHz
*Ⓒ
W88
W68
S101
5.2V
1.2V
1.4V
2.5V
0V
0.2V
0.01
0V
C52 μ10
D3
16
15
14
13
12
11
10
9
PHASE DETECTOR CHARGE PUMP
REFERENCE DIVIDER
PROGRAMABLE DIVIDER
SHIFT REGISTER LATCH
IC3
PLL IC
W67
W86
1
2
3
4
5
6
7
8
1.6V
1.6V
0V
11.9V
X1 7.2MHz
C42 22P
C41 22P
R31 1K
R32 1K
R33 1K
R55 82K
R56 82K
C45 470P
C44 470P
C43 470P
C137 0.01
J7

T-85(M)(1/2)

DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

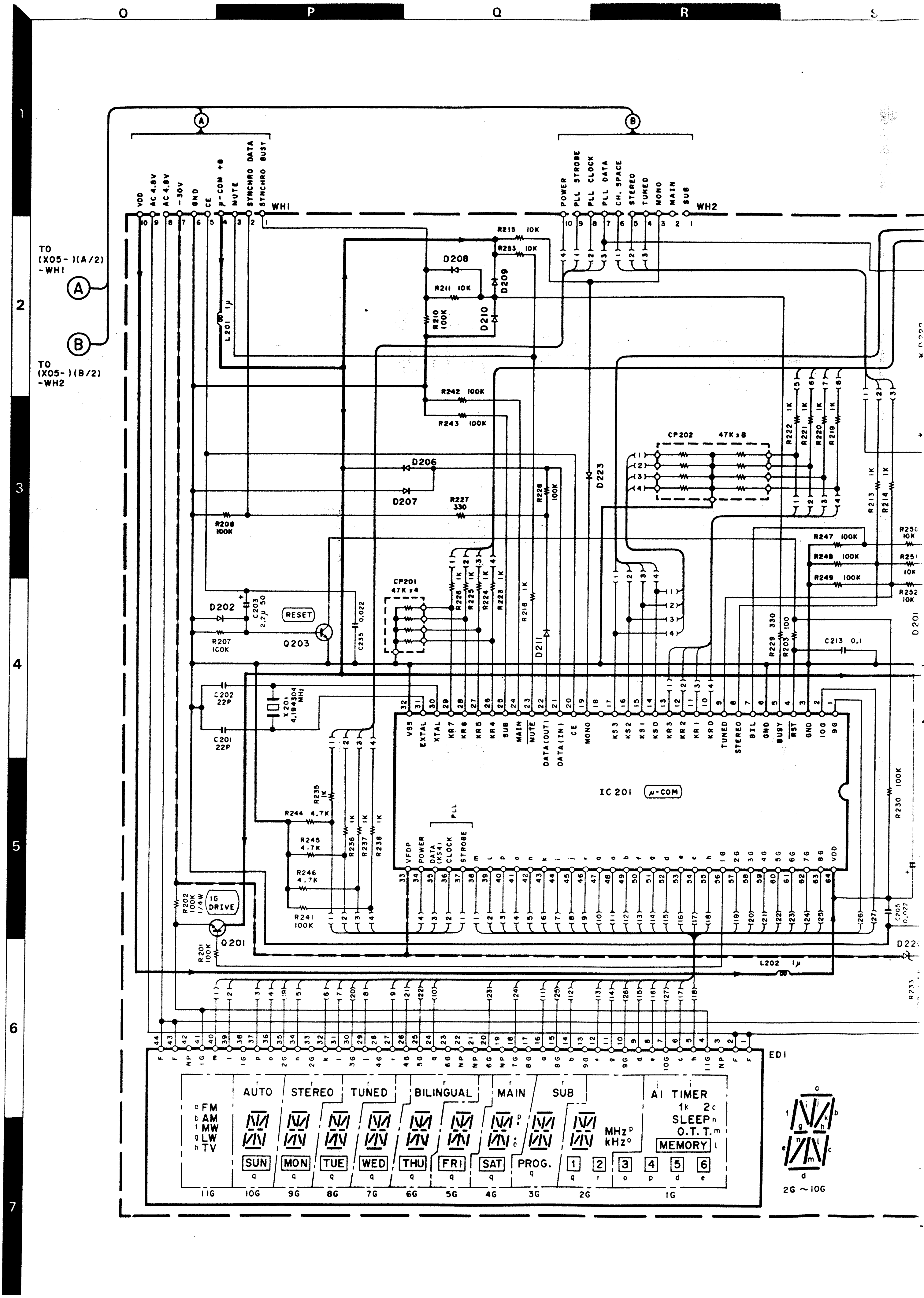
Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

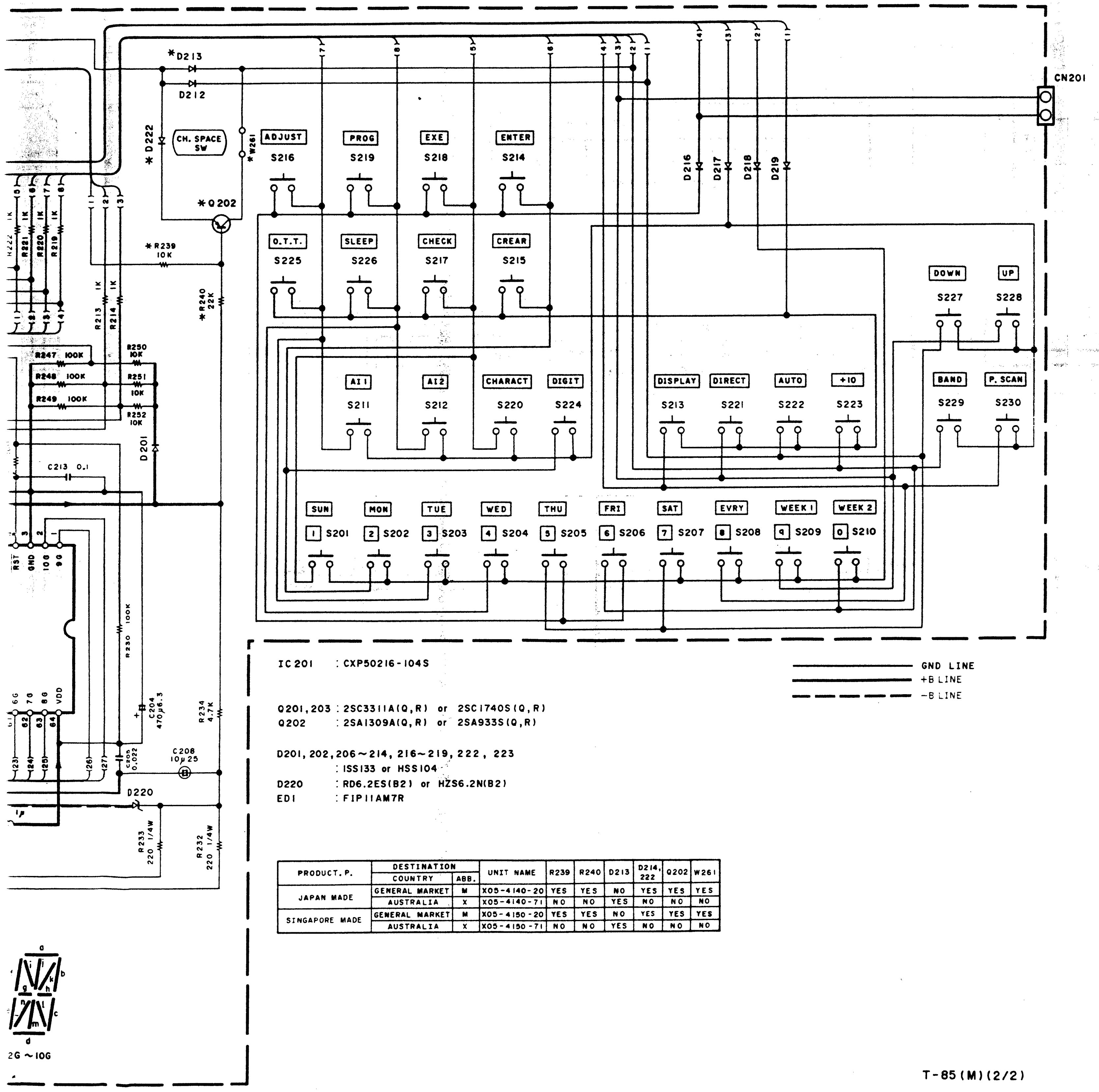
Y07-3462-71

T-85

KENWOOD


O
P
Q
R
1
2
3
4
5
6
7
TO (X05-)(A/2) -WH1
TO (X05-)(B/2) -WH2
A
B
VDD
AC 4.8V
AC 4.8V
-30V
GND
CE
µ-COM +B
MUTE
SYNCHRO DATA
SYNCHRO BUSY
WH1
POWER
PLL STROBE
PLL CLOCK
PLL DATA
CH. SPACE
STEREO
TUNED
MONO
MAIN
SUB
WH2
R215 10K
R253 10K
D208
D209
D210
R211 10K
R210 100K
L201 1µ
R242 100K
R243 100K
CP202 47K×8
R222 1K
R221 1K
R220 1K
R219 1K
D206
D207
R227 330
R228 100K
D223
R208 100K
R213 1K
R214 1K
R247 100K
R248 100K
R249 100K
R250 10K
R251 10K
R252 10K
D202
C203 2.2µ 50
RESET
R207 100K
Q203
C235 0.022
CP201 47K×4
R226 1K
R225 1K
R224 1K
R223 1K
R218 1K
D211
R229 330
R205 100
C213 0.1
D201
C202 22P
C201 22P
X201 4.194304 MHz
VSS
EXTAL
XTAL
KR7
KR6
KR5
KR4
SUB
MAIN
MUTE
DATA(OUT)
DATA(IN)
CE
MONO
KS3
KS2
KS1
KS0
KR3
KR2
KR1
KR0
TUNED
STEREO
BIL
GND
BUSY
RST
10G
9G
IC201 µ-COM
PLL
VFDP
POWER
DATA (KS4)
CLOCK
STROBE
VDD
R235 1K
R244 4.7K
R245 4.7K
R246 4.7K
R241 100K
R236 1K
R237 1K
R238 1K
R230 100K
R202 100K 1/4W
1G DRIVE
Q201
R201 100K
L202 1µ
C205 0.022
D22
R233
ED1
AUTO
STEREO
TUNED
BILINGUAL
MAIN
SUB
AI TIMER
FM
AM
MW
LW
TV
SLEEP
O.T.T.
MEMORY
MHz
kHz
SUN
MON
TUE
WED
THU
FRI
SAT
PROG.
1
2
3
4
5
6
11G
10G
9G
8G
7G
6G
5G
4G
3G
2G
1G
2G ~ 10G

(X05-4140-XX)(B/2)(JAPAN MADE)
(X05-4150-XX)(B/2)(SINGAPORE MADE)

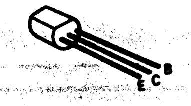

*D213
D212
*D222
CH. SPACE SW
*W261
*Q202
ADJUST S216
PROG S219
EXE S218
ENTER S214
O.T.T. S225
SLEEP S226
CHECK S217
CREAR S215
DOWN S227
UP S228
AI1 S211
AI2 S212
CHARACT S220
DIGIT S224
DISPLAY S213
DIRECT S221
AUTO S222
+10 S223
BAND S229
P. SCAN S230
SUN 1 S201
MON 2 S202
TUE 3 S203
WED 4 S204
THU 5 S205
FRI 6 S206
SAT 7 S207
EVRY 8 S208
WEEK 1 9 S209
WEEK 2 0 S210
CN201
D216
D217
D218
D219
*R239 10K
*R240 22K
R213 1K
R214 1K
R247 100K
R248 100K
R249 100K
R250 10K
R251 10K
R252 10K
D201
C213 0.1
R230 100K
C204 470μ6.3
R234 4.7K
C205 0.022
C208 10μ25
D220
R233 220 1/4W
R232 220 1/4W
RST
GND
10G
9G
VDD
2G ~ 10G
GND LINE
+B LINE
−B LINE

IC201 : CXP50216-104S

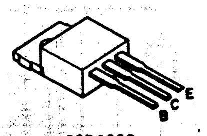
Q201,203 : 2SC3311A(Q,R) or 2SC1740S(Q,R)
Q202 : 2SA1309A(Q,R) or 2SA933S(Q,R)

D201, 202, 206～214, 216～219, 222, 223
: 1SS133 or HSS104
D220 : RD6.2ES(B2) or HZS6.2N(B2)
ED1 : FIP11AM7R

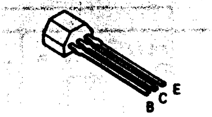
PRODUCT.P.	DESTINATION		UNIT NAME	R239	R240	D213	D214, 222	Q202	W261
	COUNTRY	ABB.							
JAPAN MADE	GENERAL MARKET	M	X05-4140-20	YES	YES	NO	YES	YES	YES
	AUSTRALIA	X	X05-4140-71	NO	NO	YES	NO	NO	NO
SINGAPORE MADE	GENERAL MARKET	M	X05-4150-20	YES	YES	NO	YES	YES	YES
	AUSTRALIA	X	X05-4150-71	NO	NO	YES	NO	NO	NO



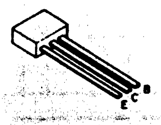
JA101
JC501
2SC1845
2SC1923
2SC2003
2SD1302



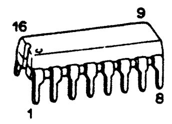
2SD1266



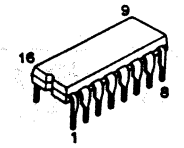
2SA933S
2SC1740S



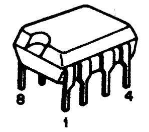
2SA1309A
2SC3311A



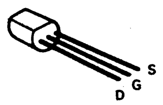
LM7001



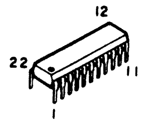
AN7470



BA10393



2SK163
2SK364



LA1265

DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

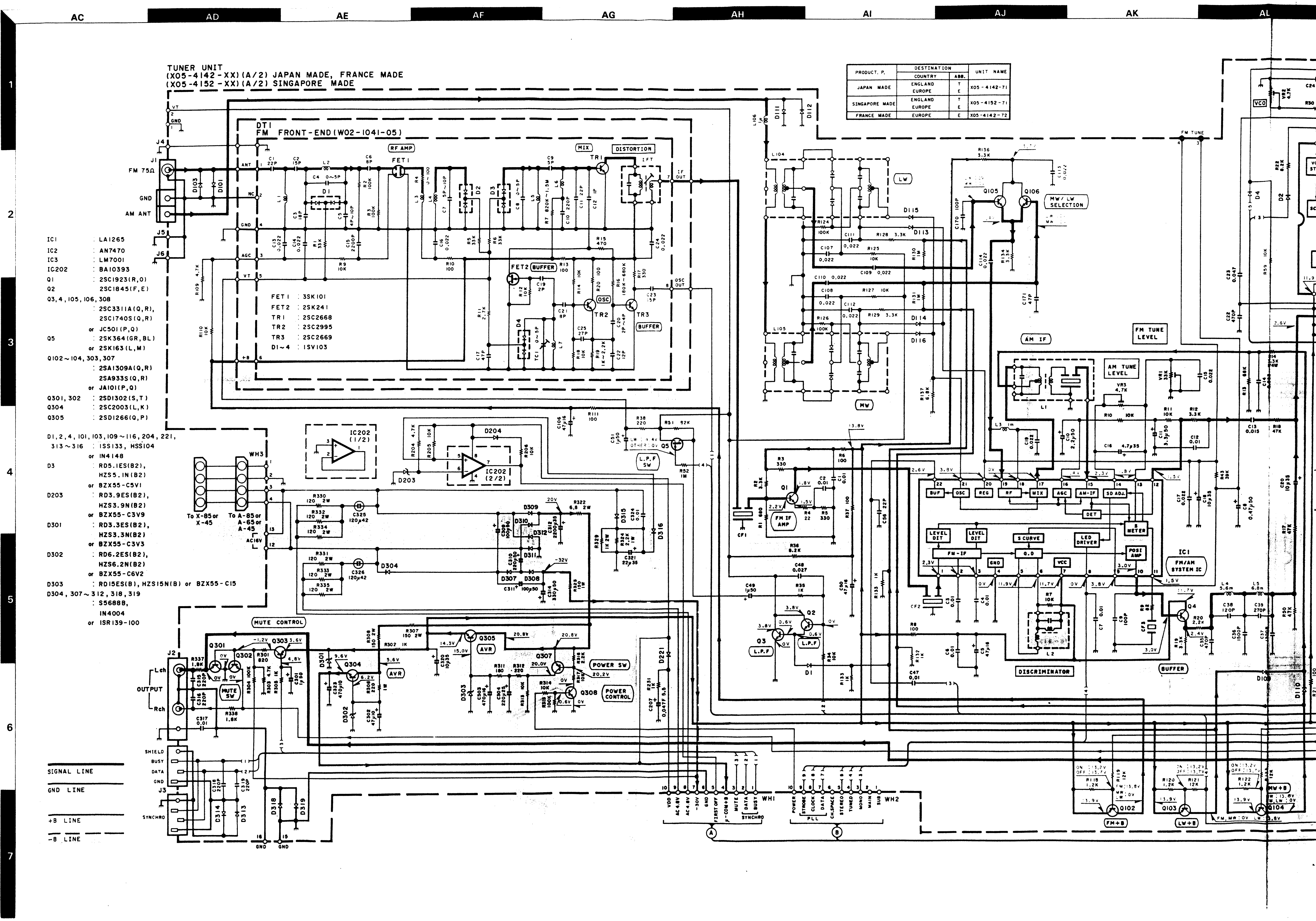
Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

T-85
KENWOOD

TUNER UNIT
(X05-4142-XX)(A/2) JAPAN MADE, FRANCE MADE
(X05-4152-XX)(A/2) SINGAPORE MADE

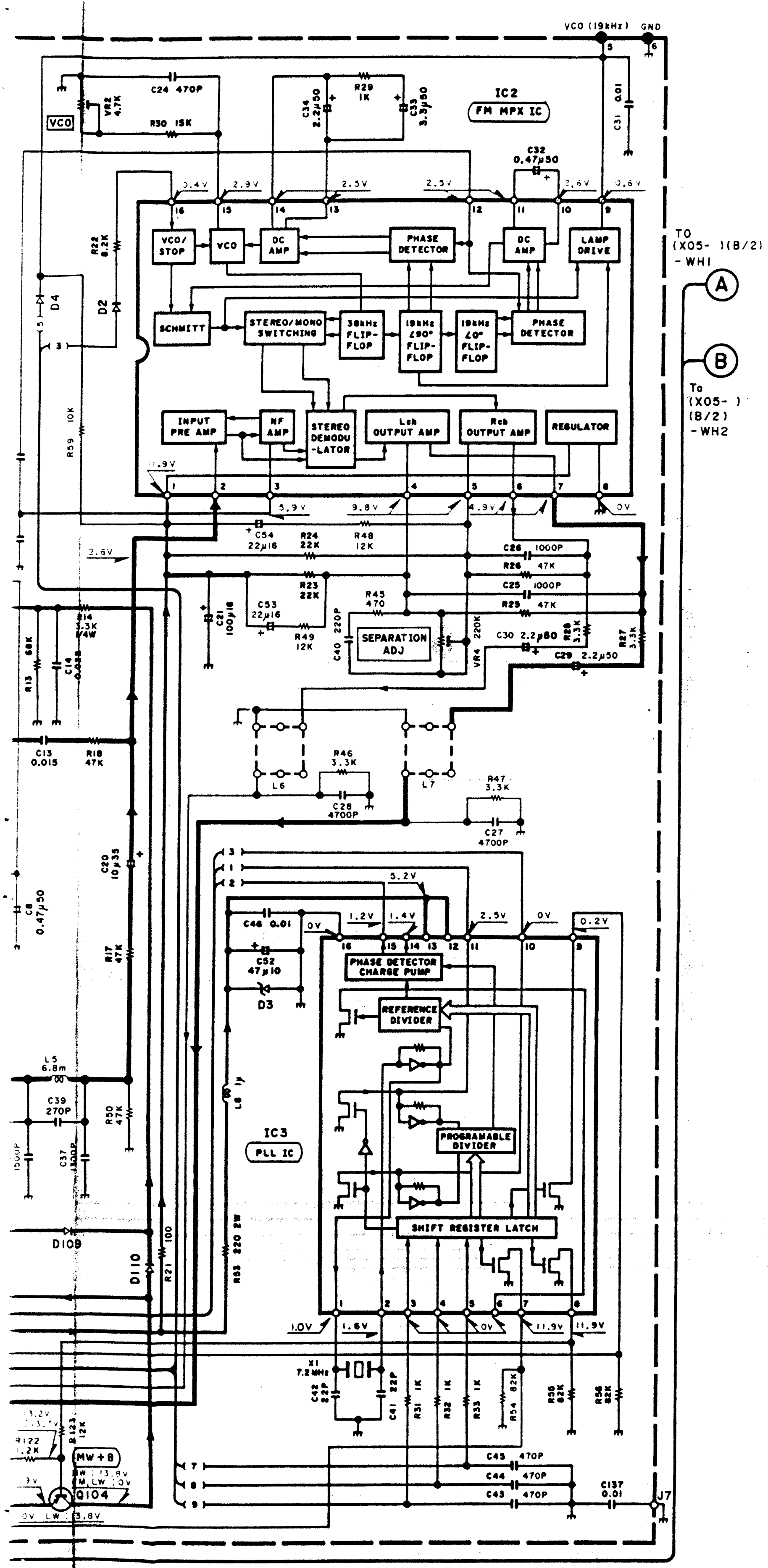
PRODUCT. P.	DESTINATION		UNIT NAME
	COUNTRY	ABB.	
JAPAN MADE	ENGLAND EUROPE	T E	X05-4142-71
SINGAPORE MADE	ENGLAND EUROPE	T E	X05-4152-71
FRANCE MADE	EUROPE	E	X05-4142-72



AC
AD
AE
AF
AG
AH
AI
AJ
AK
AL
1
2
3
4
5
6
7
DT1
FM FRONT-END (W02-1041-05)
RF AMP
MIX
DISTORTION
BUFFER
OSC
FM 75Ω
GND
AM ANT
FET1 : 3SK101
FET2 : 2SK241
TR1 : 2SC2668
TR2 : 2SC2995
TR3 : 2SC2669
D1～4 : 1SV103
LW
MW
MW/LW SELECTION
AM IF
FM TUNE LEVEL
AM TUNE LEVEL
FM IF AMP
L.P.F
L.P.F SW
IC1 FM/AM SYSTEM IC
DISCRIMINATOR
BUFFER
IC202 (1/2)
IC202 (2/2)
MUTE CONTROL
MUTE SW
AVR
POWER SW
POWER CONTROL
To X-85 or X-45
To A-85 or A-65 or A-45
AC16V
WH3
OUTPUT
Lch
Rch
SHIELD
BUSY
DATA
GND
SYNCHRO
WH1
WH2
VDD
AC 4.8V
AC 4.8V
-30V
GND
FIRST OFF
μ-COM+B
MUTE
DATA
BUSY
SYNCHRO
POWER
STROBE
CLOCK
DATA
CH.SPACE
STEREO
TUNED
MONO
MAIN
SUB
PLL
FM+B
LW+B
MW+B
VCO
FM TUNE
SIGNAL LINE
GND LINE
+B LINE
-B LINE

IC1 : LA1265
IC2 : AN7470
IC3 : LM7001
IC202 : BA10393
Q1 : 2SC1923(R,O)
Q2 2SC1845(F,E)
Q3,4,105,106,308
: 2SC3311A(Q,R),
2SC1740S(Q,R)
or JC501(P,Q)
Q5 : 2SK364(GR,BL)
or 2SK163(L,M)
Q102～104,303,307
: 2SA1309A(Q,R)
2SA933S(Q,R)
or JA101(P,Q)
Q301,302 : 2SD1302(S,T)
Q304 : 2SC2003(L,K)
Q305 : 2SD1266(Q,P)

D1,2,4,101,103,109～116,204,221,
313～316 : 1SS133, HSS104
or 1N4148
D3 : RD5.1ES(B2),
HZS5.1N(B2)
or BZX55-C5V1
D203 : RD3.9ES(B2),
HZS3.9N(B2)
or BZX55-C3V9
D301 : RD3.3ES(B2),
HZS3.3N(B2)
or BZX55-C3V3
D302 : RD6.2ES(B2),
HZS6.2N(B2)
or BZX55-C6V2
D303 : RD15ES(B), HZS15N(B) or BZX55-C15
D304,307～312,318,319
: S5688B,
1N4004
or 1SR139-100


VCO (19kHz)
GND
C24 470P
VR2 4.7K
R30 15K
VCO
R29 1K
C34 2.2μ50
C33 3.3μ50
IC2
FM MPX IC
C31 0.01
C32 0.47μ50
VCO/STOP
VCO
DC AMP
PHASE DETECTOR
DC AMP
LAMP DRIVE
SCHMITT
STEREO/MONO SWITCHING
38kHz FLIP-FLOP
19kHz ∠90° FLIP-FLOP
19kHz ∠0° FLIP-FLOP
PHASE DETECTOR
INPUT PRE AMP
NF AMP
STEREO DEMODU-LATOR
Lch OUTPUT AMP
Rch OUTPUT AMP
REGULATOR
To (X05-)(B/2) -WH1
To (X05-) (B/2) -WH2
A
B
R22 8.2K
D2
D4
R59 10K
C54 22μ16
R24 22K
R48 12K
C26 1000P
R26 47K
C25 1000P
R25 47K
R23 22K
C53 22μ16
R49 12K
R45 470
C21 100μ16
C40 220P
SEPARATION ADJ
VR4 220K
C30 2.2μ50
R28 3.3K
R27 3.3K
C29 2.2μ50
R14 3.3K 1/4W
R13 68K
C14 0.033
C13 0.015
R18 47K
R46 3.3K
L6
L7
C28 4700P
R47 3.3K
C27 4700P
C20 10μ35
C8 0.47μ50
R17 47K
C46 0.01
C52 47μ10
D3
PHASE DETECTOR CHARGE PUMP
REFERENCE DIVIDER
PROGRAMABLE DIVIDER
SHIFT REGISTER LATCH
IC3
PLL IC
L5 6.8m
C39 270P
R50 47K
C37 1500P
L8 1μ
D109
D110
R21 100
R53 220 2W
X1 7.2MHz
C42 22P
C41 22P
R31 1K
R32 1K
R33 1K
R54 82K
R55 82K
R56 82K
R122 1.2K
R123 12K
MW+B
MW : 13.8V
FM, LW : 0V
Q104
LW : 13.8V
C45 470P
C44 470P
C43 470P
C137 0.01
J7

T-85L(E)(1/2)

DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

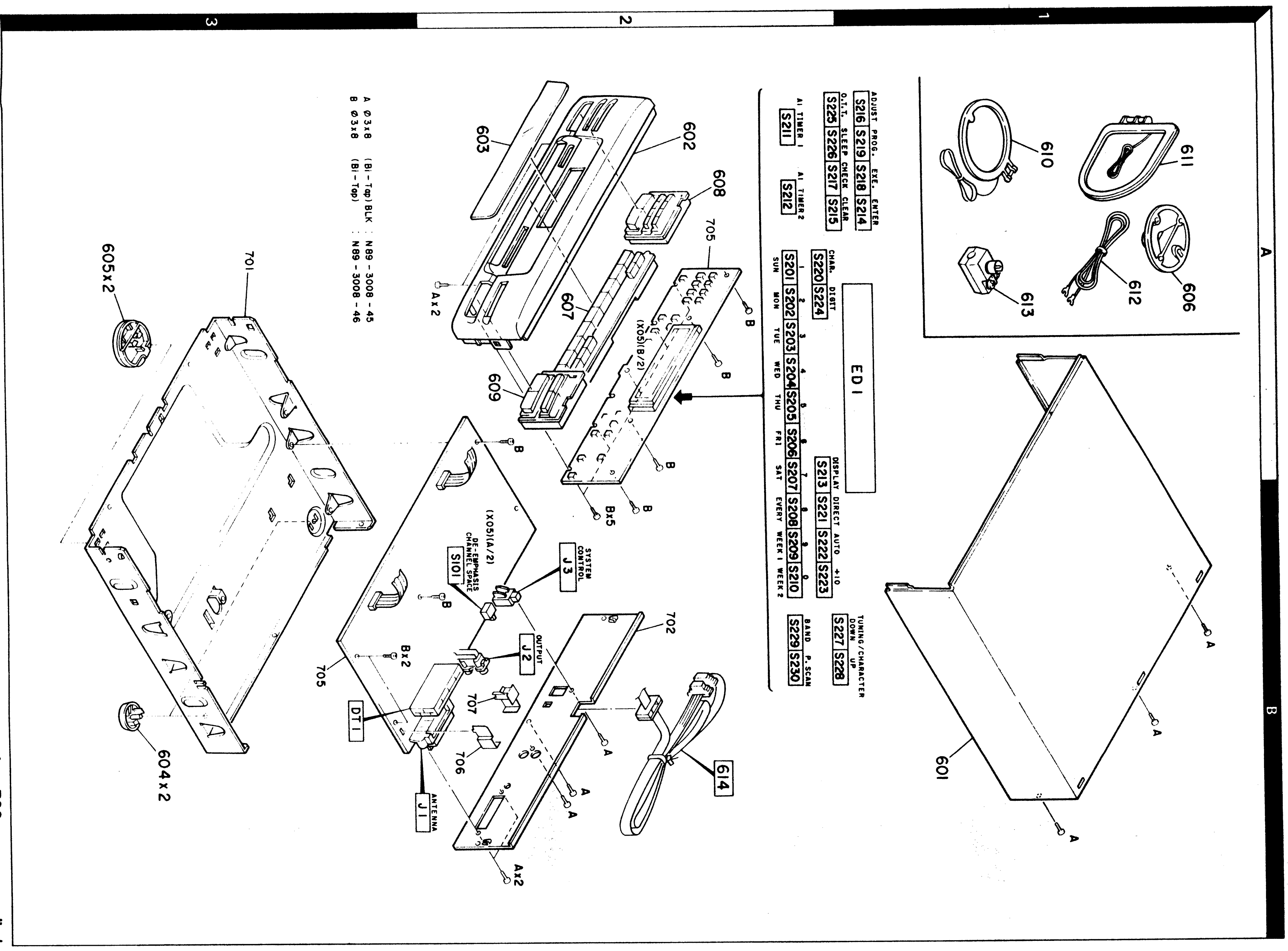
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

Y07-3462-71

T-85L

KENWOOD

EXPLODED VIEW


A
B
1
2
3
611
606
612
610
613
601
ADJUST PROG. EXE. ENTER
S216 S219 S218 S214
O.T.T. SLEEP CHECK CLEAR
S225 S226 S217 S215
AI TIMER 1
S211
AI TIMER 2
S212
CHAR. DIGIT
S220 S224
ED1
1 2 3 4 5 6 7 8 9 0
S201 S202 S203 S204 S205 S206 S207 S208 S209 S210
SUN MON TUE WED THU FRI SAT EVERY WEEK 1 WEEK 2
DISPLAY DIRECT AUTO +10
S213 S221 S222 S223
TUNING/CHARACTER DOWN UP
S227 S228
BAND P.SCAN
S229 S230
614
608
705
602
(X05)(B/2)
Bx5
702
607
SYSTEM CONTROL
J3
OUTPUT
J2
603
609
Ax2
(X05)(A/2)
DE-EMPHASIS CHANNEL SPACE
S101
707
706
ANTENNA
J1
Bx2
DT1
705
A ⌀3x8 (Bi-Tap) BLK : N89-3008-45
B ⌀3x8 (Bi-Tap) : N89-3008-46
701
604x2
605x2

Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

⋆ New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

No.1

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
			T-85 (JAPAN MADE)			
601	1B		A01-1799-01	METALLIC CABINET		
602	2A	*	A60-0085-01	PANEL		
603	2A	*	B10-1862-03	FRONT GLASS		
-			B46-0096-23	WARRANTY CARD	X	
-		*	H10-5157-02	POLYSTYRENE FOAMED FIXTURE(L)		
-		*	H10-5158-02	POLYSTYRENE FOAMED FIXTURE(R)		
-			H25-0224-04	PROTECTION BAG (800X400X0.03)		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
-		*	H50-0117-04	ITEM CARTON CASE		
604	3B		J02-0370-05	FOOT(REAR)		
605	3A		J02-1040-05	FOOT(FRONT)		
606	1A		J19-2815-04	ANTENNA HOLDER		
607	2A	*	K29-4198-02	KNOB(CHAR.,DISPLAY,1-0)		
608	2A	*	K29-4199-03	KNOB(ADJUST,O.T.T.,AI TIMER 1)		
609	2A	*	K29-4200-03	KNOB(TUNING/CHARACTER,BAND)		
A			N89-3008-45	BINDING HEAD TAPTITE SCREW		
B			N89-3008-46	BINDING HEAD TAPTITE SCREW		
611	1A		T90-0173-05	LOOP ANTENNA		
611	1A		T90-0174-05	LOOP ANTENNA		
612	1A		T90-0176-05	T TYPE ANTENNA		
			T-85 (SINGAPORE MADE)			
601	1B		A01-1887-11	METALLIC CABINET		
602	2A	*	A60-0088-01	PANEL		
603	2A	*	B10-1862-03	FRONT GLASS		
-			B46-0096-23	WARRANTY CARD	X	
-		*	H10-5224-02	POLYSTYRENE FOAMED FIXTURE(L)		
-		*	H10-5225-02	POLYSTYRENE FOAMED FIXTURE(R)		
-			H25-0224-04	PROTECTION BAG (800X400X0.03)		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
-		*	H50-0120-04	ITEM CARTON CASE		
604	3B		J02-0370-05	FOOT(REAR)		
605	3A		J02-1040-05	FOOT(FRONT)		
606	1A		J19-2815-04	ANTENNA HOLDER		
607	2A	*	K29-4198-02	KNOB(CHAR.,DISPLAY,1-0)		
608	2A	*	K29-4199-03	KNOB(ADJUST,O.T.T.,AI TIMER 1)		
609	2A	*	K29-4200-03	KNOB(TUNING/CHARACTER,BAND)		
A			N89-3008-45	BINDING HEAD TAPTITE SCREW		
B			N89-3008-46	BINDING HEAD TAPTITE SCREW		
611	1A		T90-0174-05	LOOP ANTENNA		
612	1A		T90-0175-05	T TYPE ANTENNA		
			T-85L (JAPAN MADE)			
601	1B		A01-1799-01	METALLIC CABINET		
602	2A	*	A60-0086-01	PANEL		
603	2A	*	B10-1862-03	FRONT GLASS		
-			B46-0122-13	WARRANTY CARD	E	
-			B46-0143-13	WARRANTY CARD	T	
-		*	H10-5157-02	POLYSTYRENE FOAMED FIXTURE(L)		

L:Scandinavia K:USA P:Canada
Y:PX(Far East, Hawaii) T:England E:Europe
Y:AAFES(Europe) X:Australia M:Other Areas

⚠ indicates safety critical components.

⋆ New Parts
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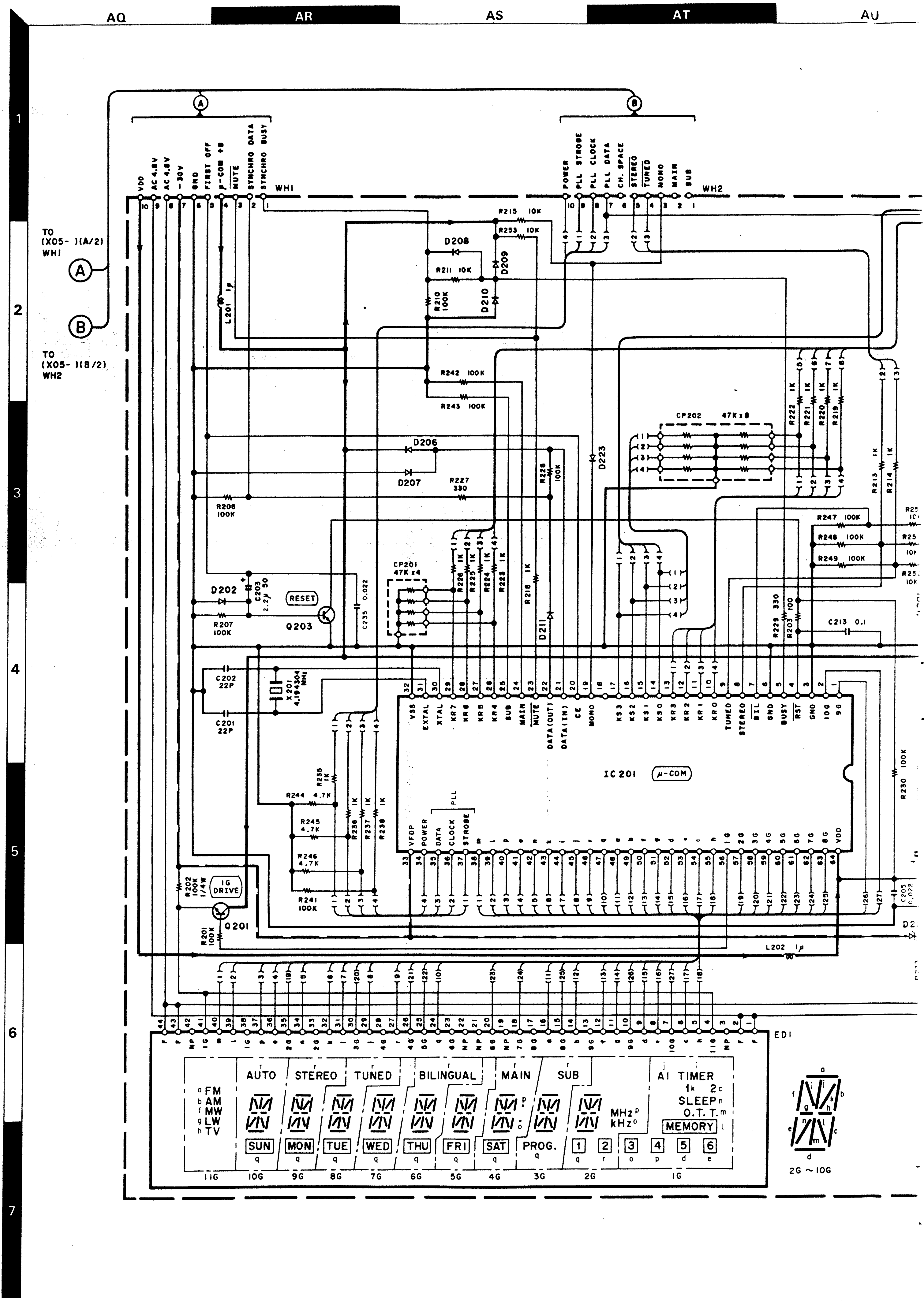
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

No.2

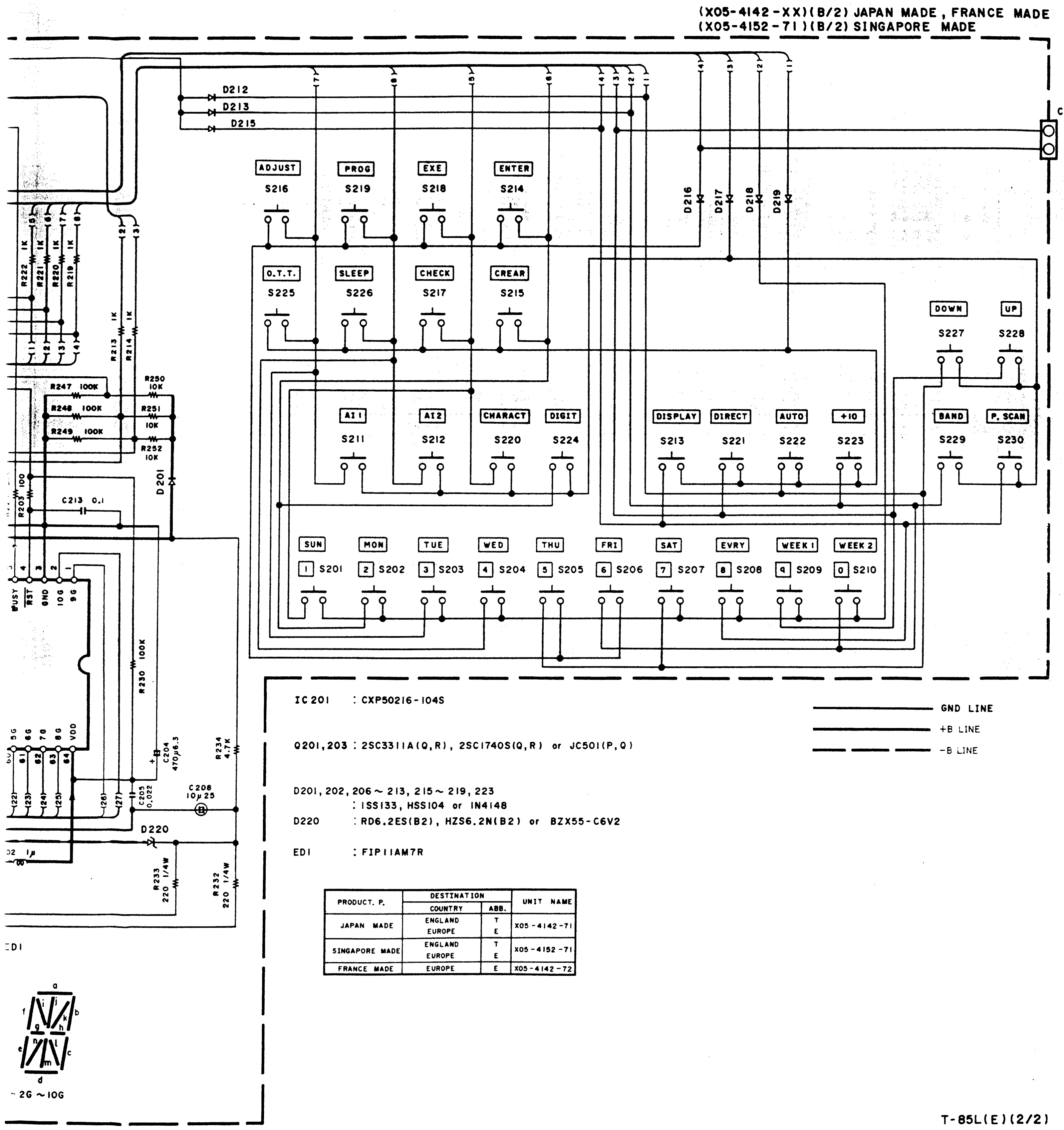
Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
-		*	H10-5158-02	POLYSTYRENE FOAMED FIXTURE(R)		
-			H25-0224-04	PROTECTION BAG (800X400X0.03)	E	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	E	
-		*	H25-0651-04	PROTECTION BAG (0232 PRINTED)	T	
-		*	H25-0653-04	PROTECTION BAG (0224 PRINTED)	T	
-		*	H50-0118-04	ITEM CARTON CASE		
604	3B		J02-0370-05	FOOT(REAR)		
605	3A		J02-1040-05	FOOT(FRONT)		
606	1A		J19-2815-04	ANTENNA HOLDER		
607	2A	*	K29-4198-02	KNOB(CHAR.,DISPLAY,1-0)		
608	2A	*	K29-4199-03	KNOB(ADJUST,O.T.T.,AI TIMER 1)		
609	2A	*	K29-4200-03	KNOB(TUNING/CHARACTER,BAND)		
A			N89-3008-45	BINDING HEAD TAPTITE SCREW		
B			N89-3008-46	BINDING HEAD TAPTITE SCREW		
611	1A		T90-0173-05	LOOP ANTENNA		
611	1A		T90-0174-05	LOOP ANTENNA		
612	1A		T90-0176-05	T TYPE ANTENNA		
613	1A		T90-0177-05	ANTENNA ADAPTOR		
			T-85L (SINGAPORE MADE)			
601	1B		A01-1887-11	METALLIC CABINET		
602	2A	*	A60-0087-01	PANEL		
603	2A	*	B10-1862-03	FRONT GLASS		
-			B46-0122-13	WARRANTY CARD	E	
-			B46-0143-13	WARRANTY CARD	T	
-		*	H10-5224-02	POLYSTYRENE FOAMED FIXTURE(L)		
-		*	H10-5225-02	POLYSTYRENE FOAMED FIXTURE(R)		
-			H25-0224-04	PROTECTION BAG (800X400X0.03)	E	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	E	
-		*	H25-0651-04	PROTECTION BAG (0232 PRINTED)	T	
-		*	H25-0653-04	PROTECTION BAG (0224 PRINTED)	T	
-		*	H50-0121-04	ITEM CARTON CASE	T	
-		*	H50-0122-04	ITEM CARTON CASE	E	
604	3B		J02-0370-05	FOOT(REAR)		
605	3A		J02-1040-05	FOOT(FRONT)		
606	1A		J19-2815-04	ANTENNA HOLDER		
607	2A	*	K29-4198-02	KNOB(CHAR.,DISPLAY,1-0)		
608	2A	*	K29-4199-03	KNOB(ADJUST,O.T.T.,AI TIMER 1)		
609	2A	*	K29-4200-03	KNOB(TUNING/CHARACTER,BAND)		
A			N89-3008-45	BINDING HEAD TAPTITE SCREW		
B			N89-3008-46	BINDING HEAD TAPTITE SCREW		
611	1A		T90-0174-05	LOOP ANTENNA		
612	1A		T90-0175-05	T TYPE ANTENNA		
613	1A		T90-0177-05	ANTENNA ADAPTOR		
			T-85L (FRANCE MADE)			
601	1B		A01-1799-01	METALLIC CABINET		
602	2A	*	A60-0086-01	PANEL		
603	2A	*	B10-1862-03	FRONT GLASS		
-			B46-0139-03	WARRANTY CARD		
-		*	H10-5222-02	POLYSTYRENE FOAMED FIXTURE(L)		

L:Scandinavia K:USA P:Canada
Y:PX(Far East, Hawaii) T:England E:Europe
Y:AAFES(Europe) X:Australia M:Other Areas

⚠ indicates safety critical components.


AQ
AR
AS
AT
AU
1
2
3
4
5
6
7
TO (X05-)(A/2) WH1
TO (X05-)(B/2) WH2
A
B
VDD
AC 4.8V
AC 4.8V
-30V
GND
FIRST OFF
μ-COM +B
MUTE
SYNCHRO DATA
SYNCHRO BUSY
WH1
POWER
PLL STROBE
PLL CLOCK
PLL DATA
CH. SPACE
STEREO
TUNED
MONO
MAIN
SUB
WH2
R215 10K
R253 10K
D208
D209
R211 10K
D210
R210 100K
L201 1μ
R242 100K
R243 100K
CP202 47K×8
R222 1K
R221 1K
R220 1K
R219 1K
R213 1K
R214 1K
D206
D207
R227 330
R228 100K
D223
R208 100K
R247 100K
R248 100K
R249 100K
CP201 47K×4
R226 1K
R225 1K
R224 1K
R223 1K
R218 1K
D202
C203 2.2μ 50
RESET
Q203
R207 100K
C235 0.022
D211
R229 330
R203 100
C213 0.1
C202 22P
C201 22P
X201 4.194304 MHz
VSS
EXTAL
XTAL
KR7
KR6
KR5
KR4
SUB
MAIN
MUTE
DATA(OUT)
DATA(IN)
CE
MONO
KS3
KS2
KS1
KS0
KR3
KR2
KR1
KR0
TUNED
STEREO
BIL
GND
BUSY
RST
GND
10G
9G
IC201 (μ-COM)
R230 100K
R235 1K
R244 4.7K
R245 4.7K
R246 4.7K
R241 100K
R236 1K
R237 1K
R238 1K
PLL
VFDP
POWER
DATA
CLOCK
STROBE
1G
2G
3G
4G
5G
6G
7G
8G
VDD
R202 100K 1/4W
1G DRIVE
Q201
R201 100K
L202 1μ
C205 0.022
EDI
AUTO
STEREO
TUNED
BILINGUAL
MAIN
SUB
AI TIMER
FM
AM
MW
LW
TV
MHz
kHz
1k 2c
SLEEP
O.T.T.
MEMORY
SUN
MON
TUE
WED
THU
FRI
SAT
PROG.
1
2
3
4
5
6
11G
10G
9G
8G
7G
6G
5G
4G
3G
2G
1G
2G ~ 10G

(X05-4142-XX)(B/2) JAPAN MADE, FRANCE MADE
(X05-4152-71)(B/2) SINGAPORE MADE


CN201
D212
D213
D215
D216
D217
D218
D219
ADJUST S216
PROG S219
EXE S218
ENTER S214
O.T.T. S225
SLEEP S226
CHECK S217
CREAR S215
DOWN S227
UP S228
AI1 S211
AI2 S212
CHARACT S220
DIGIT S224
DISPLAY S213
DIRECT S221
AUTO S222
+10 S223
BAND S229
P. SCAN S230
SUN 1 S201
MON 2 S202
TUE 3 S203
WED 4 S204
THU 5 S205
FRI 6 S206
SAT 7 S207
EVRY 8 S208
WEEK1 9 S209
WEEK2 0 S210
R222 1K
R221 1K
R220 1K
R219 1K
R213 1K
R214 1K
R247 100K
R248 100K
R249 100K
R250 10K
R251 10K
R252 10K
D201
R203 100
C213 0.1
BUSY
RST
GND
10G
9G
R230 100K
5G 6G 7G 8G VDD
61 62 63 64
C204 470μ6.3
R234 4.7K
C205 0.022
C208 10μ25
D220
R233 220 1/4W
R232 220 1/4W
ED1
a b c d e f g h i j k l m
2G ~ 10G
GND LINE
+B LINE
-B LINE

IC201 : CXP50216-104S

Q201,203 : 2SC3311A(Q,R), 2SC1740S(Q,R) or JC501(P,Q)

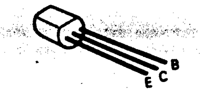
D201, 202, 206 ~ 213, 215 ~ 219, 223
: 1SS133, HSS104 or 1N4148

D220 : RD6.2ES(B2), HZS6.2N(B2) or BZX55-C6V2

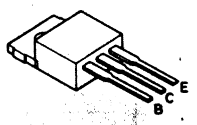
ED1 : FIP11AM7R

PRODUCT. P.	DESTINATION		UNIT NAME
	COUNTRY	ABB.	
JAPAN MADE	ENGLAND EUROPE	T E	X05-4142-71
SINGAPORE MADE	ENGLAND EUROPE	T E	X05-4152-71
FRANCE MADE	EUROPE	E	X05-4142-72

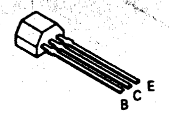
T-85L(E)(2/2)



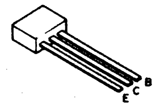
JA101
JC501
2SC1845
2SC1923
2SC2003
2SD1302



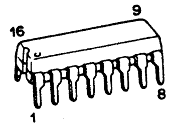
2SD1266



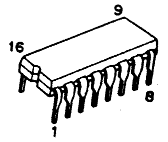
2SA933S
2SC1740S



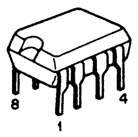
2SA1309A
2SC3311A



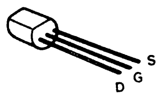
LM7001



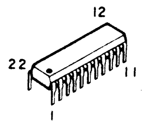
AN7470



BA10393



2SK163
2SK364



LA1265

DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

Y07-3462-71

T-85L

KENWOOD

T-85/85L

PARTS LIST

⁎ New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

No.3

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
-		⁎	H10-5223-02	POLYSTYRENE FOAMED FIXTURE(R)		
-			H25-0224-04	PROTECTION BAG (800X400X0.03)		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
-		⁎	H50-0119-04	ITEM CARTON CASE		
604	3B		J02-0370-05	FOOT(REAR)		
605	3A		J02-1040-05	FOOT(FRONT)		
606	1A		J19-2815-04	ANTENNA HOLDER		
607	2A	⁎	K29-4198-02	KNOB(CHAR.,DISPLAY,1-0)		
608	2A	⁎	K29-4199-03	KNOB(ADJUST,O.T.T.,AI TIMER 1)		
609	2A	⁎	K29-4200-03	KNOB(TUNING/CHARACTER,BAND)		
A			N89-3008-45	BINDING HEAD TAPTITE SCREW		
B			N89-3008-46	BINDING HEAD TAPTITE SCREW		
610	1A		T90-0153-05	LOOP ANTENNA		
612	1A		T90-0176-05	T TYPE ANTENNA		
613	1A		T90-0177-05	ANTENNA ADAPTOR		
T-85 TUNER UNIT (X05-4140-20)						
C1 -4			CK45FF1H103Z	CERAMIC 0.010UF Z		
C5			CE04KW1C470M	ELECTRO 47UF 16WV		
C6			C91-0769-05	CERAMIC 0.01UF K		
C7			CK45FF1H103Z	CERAMIC 0.010UF Z		
C8			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C9			CC45FSL1H101J	CERAMIC 100PF J		
C10			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C11			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
C12			CK45FF1H103Z	CERAMIC 0.010UF Z		
C13			CQ92FM1H153J	MYLAR 0.015UF J		
C14 ,15			CK45FF1H223Z	CERAMIC 0.022UF Z		
C16			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C17			CK45FF1H223Z	CERAMIC 0.022UF Z		
C18			CE04KW1V100M	ELECTRO 10UF 35WV		
C19			CK45FF1H223Z	CERAMIC 0.022UF Z		
C20			CE04KW1V100M	ELECTRO 10UF 35WV		
C21			CE04KW1C101M	ELECTRO 100UF 16WV		
C22			CK45FB1H471K	CERAMIC 470PF K		
C23			CF92FV1H473J	MF 0.047UF J		
C24			CC93FCH1H471J	CERAMIC 470PF J		
C25 ,26			CC45FSL1H151J	CERAMIC 150PF J		
C27 ,28			CQ92FM1H123J	MYLAR 0.012UF J		
C29 ,30			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C31			CK45FF1H103Z	CERAMIC 0.010UF Z		
C32			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C33			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
C34			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C41 ,42			CC45FCH1H220J	CERAMIC 22PF J		
C43 -45			CK45FB1H471K	CERAMIC 470PF K		
C46			CK45FF1H103Z	CERAMIC 0.010UF Z		
C47			C91-0769-05	CERAMIC 0.01UF K		
C48			CF92FV1H273J	MF 0.027UF J		
C49			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C50			CE04KW1C470M	ELECTRO 47UF 16WV		
C51			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C52			CE04KW1A470M	ELECTRO 47UF 10WV		
C56			CC45FSL1H220J	CERAMIC 22PF J		

L:Scandinavia K:USA P:Canada
Y:PX(Far East, Hawaii) T:England E:Europe
Y:AAFES(Europe) X:Australia M:Other Areas

⚠ indicates safety critical components.

⁎ New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

No.4

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
C106			CE04KW1C470M	ELECTRO 47UF 16WV		
C107			CK45FF1H223Z	CERAMIC 0.022UF Z		
C135,136		⁎	CQ92FM1H752J	MYLAR 7500PF J	M	
C137			C91-0769-05	CERAMIC 0.01UF K		
C201,202			CC45FCH1H220J	CERAMIC 22PF J		
C203			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C204			CE04KW0J471M	ELECTRO 470UF 6.3WV		
C205			C91-0085-05	CERAMIC 0.022UF N		
C207			C90-1827-05	BACKUP 0.047F 5.5WV		
C208			C90-1332-05	NP-ELEC 10UF 25WV		
C213			CF92FV1H104J	MF 0.10UF J		
C235			C91-0085-05	CERAMIC 0.022UF N		
C301			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C302			CE04KW1A470M	ELECTRO 47UF 10WV		
C303			CE04DW1C471M	ELECTRO 470UF 16WV		
C304			CE04KW1E221M	ELECTRO 220UF 25WV		
C309			CE04KW1H101M	ELECTRO 100UF 50WV		
C310			CE04KW1H221M	ELECTRO 220UF 50WV		
C311			CE04KW1H101M	ELECTRO 100UF 50WV		
C312			CE04KW1V222M	ELECTRO 2200UF 35WV		
C314			CE04KW1H331M	ELECTRO 330UF 50WV		
C317			CK45FF1H103Z	CERAMIC 0.010UF Z		
C318,319			CC45FSL1H221J	CERAMIC 220PF J		
C320			CE04KW1V100M	ELECTRO 10UF 35WV		
C321			CE04KW1V220M	ELECTRO 22UF 35WV		
C323			CE04KW1A471M	ELECTRO 470UF 10WV		
C324			CK45FF1H103Z	CERAMIC 0.010UF Z		
C325,326			C90-1839-05	NP-ELEC 120UF 42WV		
614	2B	⁎	E30-2667-05	CORD WITH CONNECTOR(WH3)		
J1	3B		E20-0476-05	LOCK TERMINAL BOARD(ANTENNA)		
J2	2B		E13-0235-05	PHONO JACK (2P)(OUTPUT)		
J3	2B		E08-0312-05	RECTANGULAR RECEPTACLE(S.CONT)		
CF1 ,2			L72-0531-05	CERAMIC FILTER		
CF3			L72-0096-05	CERAMIC FILTER		
L1			L30-0488-05	AM IFT		
L2			L30-0439-25	FM IFT (DISCRIMINATOR)		
L8			L40-1091-17	SMALL FIXED INDUCTOR(1.0UH)		
L104			L39-0189-05	COMBINATION COIL		
L106			L40-1091-17	SMALL FIXED INDUCTOR(1.0UH)		
L201,202			L40-1091-17	SMALL FIXED INDUCTOR(1.0UH)		
X1			L77-1122-05	CRYSTAL RESONATOR(7.2MHz)		
X201			L77-1176-05	CRYSTAL RESONATOR(4.194304MHz)		
CP201			R90-0487-05	MULTI-COMP 47KX4 J 1/6W		
CP202			R90-0804-05	MULTI-COMP 47KX8 J 1/4W		
R53			RS14DB3D221J	FL-PROOF RS 220 J 2W		
R306			RS14KB3A221J	FL-PROOF RS 220 J 1W		
R307,308			RS14DB3D151J	FL-PROOF RS 150 J 2W		
R322			RS14DB3D6R8J	FL-PROOF RS 6.8 J 2W		
R323			RS14DB3A151J	FL-PROOF RS 150 J 1W		
R324			RS14DB3A222J	FL-PROOF RS 2.2K J 1W		
R329			RS14DB3D102J	FL-PROOF RS 1.0K J 2W		
R330-335			RS14DB3D121J	FL-PROOF RS 120 J 2W		
VR1			R12-3687-05	TRIMMING POT. 33K (FM T-LEVEL)		
VR2 ,3			R12-1619-05	TRIMMING POT. 4.7K(VCO,AM T-L)		

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No.5

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
S101	2B		S31-2094-05	SLIDE SWITCH(DE-EM,CH.SPACE)	M	
S201-230	2A,2B		S40-1064-05	PUSH SWITCH		
D2			HSS104	DIODE		
D2			1SS133	DIODE		
D3			HZS5.1N(B2)	ZENER DIODE		
D3			RD5.1ES(B2)	ZENER DIODE		
D4			HSS104	DIODE		
D4			1SS133	DIODE		
D111,112			HSS104	DIODE		
D111,112			1SS133	DIODE		
D201,202			HSS104	DIODE		
D201,202			1SS133	DIODE		
D203			HZS3.9N(B2)	ZENER DIODE		
D203			RD3.9ES(B2)	ZENER DIODE		
D204			HSS104	DIODE		
D204			1SS133	DIODE		
D206-212			HSS104	DIODE		
D206-212			1SS133	DIODE		
D213			HSS104	DIODE	X	
D213			1SS133	DIODE	X	
D214			HSS104	DIODE	M	
D214			1SS133	DIODE	M	
D216-219			HSS104	DIODE		
D216-219			1SS133	DIODE		
D220			HZS6.2N(B2)	ZENER DIODE		
D220			RD6.2ES(B2)	ZENER DIODE		
D221			HSS104	DIODE		
D221			1SS133	DIODE		
D222			HSS104	DIODE	M	
D222			1SS133	DIODE	M	
D223			HSS104	DIODE		
D223			1SS133	DIODE		
D301			HZS3.3N(B2)	ZENER DIODE		
D301			RD3.3ES(B2)	ZENER DIODE		
D302			HZS6.2N(B2)	ZENER DIODE		
D302			RD6.2ES(B2)	ZENER DIODE		
D303			HZS15N(B)	ZENER DIODE		
D303			RD15ES(B)	ZENER DIODE		
D304			S5688B	DIODE		
D304			1SR139-100	DIODE		
D307-312			S5688B	DIODE		
D307-312			1SR139-100	DIODE		
D313-316			HSS104	DIODE		
D313-316			1SS133	DIODE		
D318,319			S5688B	DIODE		
D318,319			1SR139-100	DIODE		
ED1	1A		FIP11AM7R	FLUORESCENT INDICATOR TUBE		
IC1			LA1265	IC(FM/AM TUNER)		
IC2			AN7470	IC(FM MPX)		
IC3			LM7001	IC(PLL FREQUENCY SYNTHESIZER)		
IC201		*	CXP50216-104S	IC(MICROPROCESSOR)		
IC202			BA10393	IC(DUAL COMPALATOR)		
Q1			2SC1923(R,O)	TRANSISTOR		
Q2			2SC1845(F,E)	TRANSISTOR		

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No.6

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
Q3			2SC1740S(Q,R)	TRANSISTOR		
Q3			2SC3311A(Q,R)	TRANSISTOR		
Q102			2SA1309A(Q,R)	TRANSISTOR		
Q102			2SA933S(Q,R)	TRANSISTOR		
Q104			2SA1309A(Q,R)	TRANSISTOR		
Q104			2SA933S(Q,R)	TRANSISTOR		
Q107,108			2SC1740S(Q,R)	TRANSISTOR	M	
Q107,108			2SC3311A(Q,R)	TRANSISTOR	M	
Q201			2SC1740S(Q,R)	TRANSISTOR		
Q201			2SC3311A(Q,R)	TRANSISTOR		
Q202			2SA1309A(Q,R)	TRANSISTOR	M	
Q202			2SA933S(Q,R)	TRANSISTOR	M	
Q203			2SC1740S(Q,R)	TRANSISTOR		
Q203			2SC3311A(Q,R)	TRANSISTOR		
Q301,302			2SD1302(S,T)	TRANSISTOR		
Q303			2SA1309A(Q,R)	TRANSISTOR		
Q303			2SA933S(Q,R)	TRANSISTOR		
Q304			2SC2003(L,K)	TRANSISTOR		
Q305			2SD1266(Q,P)	TRANSISTOR		
Q307			2SA1309A(Q,R)	TRANSISTOR		
Q307			2SA933S(Q,R)	TRANSISTOR		
Q308			2SC1740S(Q,R)	TRANSISTOR		
Q308			2SC3311A(Q,R)	TRANSISTOR		
DT1	3B		W02-1042-05	FM FRONT-END ASSY		
T-85L TUNER UNIT (X05-4142-71)						
C1 -4			CK45FF1H103Z	CERAMIC 0.010UF Z		
C5			CE04KW1C470M	ELECTRO 47UF 16WV		
C6			C91-0769-05	CERAMIC 0.01UF K		
C7			CK45FF1H103Z	CERAMIC 0.010UF Z		
C8			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C9			CC45FSL1H101J	CERAMIC 100PF J		
C10			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C11			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
C12			CK45FF1H103Z	CERAMIC 0.010UF Z		
C13			CQ92FM1H153J	MYLAR 0.015UF J		
C14 ,15			CK45FF1H223Z	CERAMIC 0.022UF Z		
C16			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C17			CK45FF1H223Z	CERAMIC 0.022UF Z		
C18			CE04KW1V100M	ELECTRO 10UF 35WV		
C19			CK45FF1H223Z	CERAMIC 0.022UF Z		
C20			CE04KW1V100M	ELECTRO 10UF 35WV		
C21			CE04KW1C101M	ELECTRO 100UF 16WV		
C22			CK45FB1H471K	CERAMIC 470PF K		
C23			CF92FV1H473J	MF 0.047UF J		
C24			CC93FCH1H471J	CERAMIC 470PF J		
C25 ,26			CK45FB1H102K	CERAMIC 1000PF K		
C27 ,28			CQ92FM1H472J	MYLAR 4700PF J		
C29 ,30			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C31			CK45FF1H103Z	CERAMIC 0.010UF Z		
C32			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C33			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
C34			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C35			CK45FB1H471K	CERAMIC 470PF K		
C36			CQ92FM1H152J	MYLAR 1500PF J		

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Y:PX(Far East, Hawaii) T:England E:Europe
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⚠ indicates safety critical components

PARTS LIST

T-85/85L

PARTS LIST

× New Parts
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Teile ohne Parts No. werden nicht geliefert.

No.7

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
C37			CQ92FM1H132J	MYLAR 1300PF J		
C38			CC45FSL1H121J	CERAMIC 120PF J		
C39			CC45FSL1H271J	CERAMIC 270PF J		
C40			CC45FSL1H221J	CERAMIC 220PF J		
C41 ,42			CC45FCH1H220J	CERAMIC 22PF J		
C43 -45			CK45FB1H471K	CERAMIC 470PF K		
C46			CK45FF1H103Z	CERAMIC 0.010UF Z		
C47			C91-0769-05	CERAMIC 0.01UF K		
C48			CF92FV1H273J	MF 0.027UF J		
C49			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C50			CE04KW1C470M	ELECTRO 47UF 16WV		
C51			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C52			CE04KW1A470M	ELECTRO 47UF 10WV		
C53 ,54			CE04KW1C220M	ELECTRO 22UF 16WV		
C56			CC45FSL1H220J	CERAMIC 22PF J		
C106			CE04KW1C470M	ELECTRO 47UF 16WV		
C107,108			CK45FF1H223Z	CERAMIC 0.022UF Z		
C109,110			C91-0085-05	CERAMIC 0.022UF N		
C111-113			CK45FF1H223Z	CERAMIC 0.022UF Z		
C114			C91-0085-05	CERAMIC 0.022UF N		
C137			C91-0769-05	CERAMIC 0.01UF K		
C170			C91-0745-05	CERAMIC 100PF K		
C171			C91-0737-05	CERAMIC 47PF J		
C201,202			CC45FCH1H220J	CERAMIC 22PF J		
C203			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C204			CE04KW0J471M	ELECTRO 470UF 6.3WV		
C205			C91-0085-05	CERAMIC 0.022UF N		
C207			C90-1827-05	BACKUP 0.047F 5.5WV		
C208			C90-1332-05	NP-ELEC 10UF 25WV		
C213			CF92FV1H104J	MF 0.10UF J		
C235			C91-0085-05	CERAMIC 0.022UF N		
C301			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C302			CE04KW1A470M	ELECTRO 47UF 10WV		
C303			CE04DW1C471M	ELECTRO 470UF 16WV		
C304			CE04KW1E221M	ELECTRO 220UF 25WV		
C309			CE04KW1H101M	ELECTRO 100UF 50WV		
C310			CE04KW1H221M	ELECTRO 220UF 50WV		
C311			CE04KW1H101M	ELECTRO 100UF 50WV		
C312			CE04KW1V222M	ELECTRO 2200UF 35WV		
C314			CE04KW1H331M	ELECTRO 330UF 50WV		
C315,316			C91-0749-05	CERAMIC 220PF K		
C317			CK45FF1H103Z	CERAMIC 0.010UF Z		
C318,319			CC45FSL1H221J	CERAMIC 220PF J		
C320			CE04KW1V100M	ELECTRO 10UF 35WV		
C321			CE04KW1V220M	ELECTRO 22UF 35WV		
C323			CE04KW1A471M	ELECTRO 470UF 10WV		
C324			CK45FF1H103Z	CERAMIC 0.010UF Z		
C325,326			C90-1839-05	NP-ELEC 120UF 42WV		
614	2B	*	E30-2667-05	CORD WITH CONNECTOR(WH3)		
J1	3B		E20-0321-05	LOCK TERMINAL BOARD(ANTENNA)		
J2	2B		E13-0235-05	PHONO JACK (2P)(OUTPUT)		
J3	2B		E08-0312-05	RECTANGULAR RECEPTACLE(S.CONT)		
CF1 ,2			L72-0536-05	CERAMIC FILTER		
CF3			L72-0096-05	CERAMIC FILTER		

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No.8

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
L1			L30-0488-05	AM IFT		
L2			L30-0439-25	FM IFT (DISCRIMINATOR)		
L3			L40-1021-14	SMALL FIXED INDUCTOR(1.0mH,K)		
L4			L40-5625-29	SMALL FIXED INDUCTOR(5.6mH,J)		
L5			L40-6825-29	SMALL FIXED INDUCTOR(6.8mH,J)		
L6 ,7			L79-0790-05	LC FILTER		
L8			L40-1091-17	SMALL FIXED INDUCTOR(1.0UH)		
L104			L39-0195-05	COMBINATION COIL		
L105			L39-0192-05	COMBINATION COIL		
L106			L40-1091-17	SMALL FIXED INDUCTOR(1.0UH)		
L201,202			L40-1091-17	SMALL FIXED INDUCTOR(1.0UH)		
X1			L77-1122-05	CRYSTAL RESONATOR(7.2MHz)		
X201			L77-1176-05	CRYSTAL RESONATOR(4.194304MHz)		
CP201			R90-0487-05	MULTI-COMP 47KX4 J 1/6W		
CP202			R90-0804-05	MULTI-COMP 47KX8 J 1/4W		
R53			RS14DB3D221J	FL-PROOF RS 220 J 2W		
R306			RS14KB3A221J	FL-PROOF RS 220 J 1W		
R307,308			RS14DB3D151J	FL-PROOF RS 150 J 2W		
R322			RS14DB3D6R8J	FL-PROOF RS 6.8 J 2W		
R323			RS14DB3A151J	FL-PROOF RS 150 J 1W		
R324			RS14DB3A222J	FL-PROOF RS 2.2K J 1W		
R329			RS14DB3D102J	FL-PROOF RS 1.0K J 2W		
R330-335			RS14DB3D121J	FL-PROOF RS 120 J 2W		
VR1			R12-3130-05	TRIMMING POT. 33K (FM T-LEVEL)		F
VR1			R12-3687-05	TRIMMING POT. 33K (FM T-LEVEL)		
VR2 ,3			R12-1089-05	TRIMMING POT. 4.7K(VCO,AM T-L)		F
VR2 ,3			R12-1619-05	TRIMMING POT. 4.7K(VCO,AM T-L)		
VR4			R12-5060-05	TRIMMING POT. 220K(SEPARATION)		F
VR4			R12-5652-05	TRIMMING POT. 220K(SEPARATION)		
S201-230	2A,2B		S40-1064-05	PUSH SWITCH		
D1 ,2			HSS104	DIODE		
D1 ,2			1N4148	DIODE		F
D1 ,2			1SS133	DIODE		
D3			BZX55-C5V1	ZENER DIODE		F
D3			HZS5.1N(B2)	ZENER DIODE		
D3			RD5.1ES(B2)	ZENER DIODE		
D4			HSS104	DIODE		
D4			1N4148	DIODE		F
D4			1SS133	DIODE		
D101			HSS104	DIODE		
D101			1N4148	DIODE		F
D101			1SS133	DIODE		
D103			HSS104	DIODE		
D103			1N4148	DIODE		F
D103			1SS133	DIODE		
D109-116			HSS104	DIODE		
D109-116			1N4148	DIODE		F
D109-116			1SS133	DIODE		
D201,202			HSS104	DIODE		
D201,202			1N4148	DIODE		F
D201,202			1SS133	DIODE		
D203			BZX55-C3V9	ZENER DIODE		F
D203			HZS3.9N(B2)	ZENER DIODE		

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T-85/85L

PARTS LIST

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No.9

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
D203			RD3.9ES(B2)	ZENER DIODE		
D204			HSS104	DIODE		
D204			1N4148	DIODE		F
D204			1SS133	DIODE		
D206-213			HSS104	DIODE		
D206-213			1N4148	DIODE		F
D206-213			1SS133	DIODE		
D215-219			HSS104	DIODE		
D215-219			1N4148	DIODE		F
D215-219			1SS133	DIODE		
D220			BZX55-C6V2	DIODE		F
D220			HZS6.2N(B2)	ZENER DIODE		
D220			RD6.2ES(B2)	ZENER DIODE		
D221			HSS104	DIODE		
D221			1N4148	DIODE		F
D221			1SS133	DIODE		
D223			HSS104	DIODE		
D223			1N4148	DIODE		F
D223			1SS133	DIODE		
D301			BZX55-C3V3	ZENER DIODE		F
D301			HZS3.3N(B2)	ZENER DIODE		
D301			RD3.3ES(B2)	ZENER DIODE		
D302			BZX55-C6V2	DIODE		F
D302			HZS6.2N(B2)	ZENER DIODE		
D302			RD6.2ES(B2)	ZENER DIODE		
D303			BZX55-C15	DIODE		F
D303			HZS15N(B)	ZENER DIODE		
D303			RD15ES(B)	ZENER DIODE		
D304			S5688B	DIODE		
D304			1N4004	DIODE		F
D304			1SR139-100	DIODE		
D307-312			S5688B	DIODE		
D307-312			1N4004	DIODE		F
D307-312			1SR139-100	DIODE		
D313-316			HSS104	DIODE		
D313-316			1N4148	DIODE		F
D313-316			1SS133	DIODE		
D318,319			S5688B	DIODE		
D318,319			1N4004	DIODE		F
D318,319			1SR139-100	DIODE		
ED1	1A		FIP11AM7R	FLUORESCENT INDICATOR TUBE		
IC1			LA1265	IC(FM/AM TUNER)		
IC2			AN7470	IC(FM MPX)		
IC3			LM7001	IC(PLL FREQUENCY SYNTHESIZER)		
IC201		*	CXP50216-104S	IC(MICROPROCESSOR)		
IC202			BA10393	IC(DUAL COMPALATOR)		
Q1			2SC1923(R,O)	TRANSISTOR		
Q2			2SC1845(F,E)	TRANSISTOR		
Q3 ,4			JC501(P,Q)	TRANSISTOR		F
Q3 ,4			2SC1740S(Q,R)	TRANSISTOR		
Q3 ,4			2SC3311A(Q,R)	TRANSISTOR		
Q5			2SK163(L,M)	FET		
Q5			2SK364(GR,BL)	FET		
Q102-104			JA101(P,Q)	TRANSISTOR		F
Q102-104			2SA1309A(Q,R)	TRANSISTOR		

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No.10

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
Q102-104			2SA933S(Q,R)	TRANSISTOR		
Q105,106			JC501(P,Q)	TRANSISTOR		F
Q105,106			2SC1740S(Q,R)	TRANSISTOR		
Q105,106			2SC3311A(Q,R)	TRANSISTOR		
Q201			JC501(P,Q)	TRANSISTOR		F
Q201			2SC1740S(Q,R)	TRANSISTOR		
Q201			2SC3311A(Q,R)	TRANSISTOR		
Q203			JC501(P,Q)	TRANSISTOR		F
Q203			2SC1740S(Q,R)	TRANSISTOR		
Q203			2SC3311A(Q,R)	TRANSISTOR		
Q301,302			2SD1302(S,T)	TRANSISTOR		
Q303			JA101(P,Q)	TRANSISTOR		F
Q303			2SA1309A(Q,R)	TRANSISTOR		
Q303			2SA933S(Q,R)	TRANSISTOR		
Q304			2SC2003(L,K)	TRANSISTOR		
Q305			2SD1266(Q,P)	TRANSISTOR		
Q307			JA101(P,Q)	TRANSISTOR		F
Q307			2SA1309A(Q,R)	TRANSISTOR		
Q307			2SA933S(Q,R)	TRANSISTOR		
Q308			JC501(P,Q)	TRANSISTOR		F
Q308			2SC1740S(Q,R)	TRANSISTOR		
Q308			2SC3311A(Q,R)	TRANSISTOR		
DT1	3B		W02-1041-05	FM FRONT-END ASSY		

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T-85/85L

SPECIFICATIONS

T-85

FM tuner section

Tuning frequency range	87.5 MHz ~ 108 MHz
Usable sensitivity (IHF at 75 Ω)	0.95 μV/10.8 dBf
Total harmonic distortion (at 1 kHz, 65 dBf input)	
MONO	0.4%
STEREO	0.5%
Signal to noise ratio (at 1 kHz, 65 dBf input)	
MONO	78 dB
STEREO	72 dB
Stereo separation (at 1 kHz)	40 dB
Alternate channel selectivity (±400 kHz)	50 dB
Frequency response (30 Hz ~ 15 kHz)	+0.5 dB, −3.5 dB
Output level/Impedance (at 75 kHz dev.)	0.6 V/3.3 kΩ

AM tuner section

Tuning frequency range	
531 kHz ~ 1,602 kHz	9 kHz step
530 kHz ~ 1,610 kHz	10 kHz step
Usable sensitivity	14 μV/500 μV/m
Signal to noise ratio (at 30% mod. 1 mV input)	48 dB

General

Dimension	W: 360 mm
	H: 89 mm
	D: 353 mm
Weight	3.0 kg

KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

KENWOOD poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

KENWOOD strebt ständige, Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the Europe (E) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

T-85L

FM tuner section

Tuning frequency range	87.5 MHz ~ 108 MHz
Usable sensitivity (DIN at 75 Ω)	
MONO	0.6 μV
STEREO	22 μV
Total harmonic distortion (DIN at 1 kHz, 65.2 dBf input)	
MONO	0.2%
STEREO	0.8%
Signal to noise ratio (DIN weighted at 1 kHz, 65.2 dBf input)	
MONO	68 dB
STEREO	63 dB
Stereo separation (DIN at 1 kHz)	42 dB
Alternate channel selectivity (DIN ±300 kHz)	64 dB
Frequency response (30 Hz ~ 15 kHz)	+0.5 dB, −3.5 dB
Output level/Impedance (at 75 kHz dev.)	0.6 V/3.3 kΩ

MW tuner section

Tuning frequency range	531 kHz ~ 1,602 kHz
Usable sensitivity	13 μV/500 μV/m
Signal to noise ratio (at 30% mod. 1 mV input)	49 dB

LW tuner section

Tuning frequency range	153 kHz ~ 281 kHz
Usable sensitivity	20 μV
Signal to noise ratio (at 30% mod. 1 mV input)	47 dB

General

Dimension	W: 360 mm
	H: 89 mm
	D: 353 mm
Weight	3.0 kg

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